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The Whole ART OF HUSBANDRY; Or, The Way of *Managing* and *Improving* OF LAND.

Tho: Hallows

BEING

A full COLLECTION of what hath been Writ, either by ancient or modern Authors: With many Additions of new Experiments and Improvements not treated of by any others.

AS ALSO,

An ACCOUNT of the particular Sorts of *Husbandry* uſed in ſeveral *Counties*; with Propoſals for its farther Improvement.

To which is added,

The Country-man's Kalendar, what he is to do every Month in the Year.

By *J. Mortimer*, Eſq; *F. R. S.*

The Third Edition Corrected.

LONDON,
Printed by *J. H.* for *H.* and *G. Mortlock* at the *Phœnix*,
and *R. Robinſon* at the *Golden Lion* in St. *Paul's*
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TO THE

ROYAL SOCIETY.

I Know not to whom I can more properly addreſs this Treatiſe than to that SOCIETY, to whoſe Incouragement, Inquiries, and Directions, it owes its Birth; eſpecially ſince the Members thereof are the moſt capable Judges and greateſt Incouragers of every thing that may contribute to the Service and general Good of Mankind, and have taken ſuch Pains and Care to trace Nature out in all her Receſſes, as to let no uſeful Part of Knowledge eſcape their Obſervation and Conſideration: Every one being obliged, in what Part ſoever of the World they are, to make faithful Records of the Works both of Nature and Art, for the detecting of ſpecious and prevailing Errors, the reſtoring Truth to its Luſtre, and the improving of it ſo as to clear the way to what remains undiſcovered.

I muſt here beg leave to acknowledge my Obligations to the Learned Dr. *Sloan* for his favourable Aſſiſtance and Incouragement of this Work; who, agreeable to the great Deſigns of this Honourable Society, has greatly contributed to the Advancement of uſeful Knowledge.

And tho' *Agriculture* is what ſome may have a ſlight Opinion of, yet 'tis one of thoſe Arts, to the Teachers whereof Dr. *Sprat* (now Biſhop of *Rocheſter*) ſays, the Ancients pay'd the Diviner Sort of Honour. And tho' the Zeal (as he ſays) by which they expreſſed their Gratitude to ſuch Benefactors degenerated into Superſtition; yet has it taught us, That a higher Degree of Reputation is due to the Diſcoverers of profitable Arts, than to the Teachers of ſpeculative Doctrines, or to Conquerours themſelves. But I need ſay little either of the Antiquity or Uſefulneſs of Husbandry, ſince ſo many great and learned Men have thought it worth their Study and Commendation, and that the Advantages of it reach all Parts and Perſons in the World: So that there can be nothing more univerſally good, nor conſequently better deſerve your Honourable Protection.

As to what I here preſent you with upon this Subject, I ſhall only ſay, I have ſeen and peruſed the moſt approved Works both of Ancient and Modern Authors that treat of it, and have Collected what I thought material in them towards the improving of this Vulgar Art. I have alſo obſerved the Practice and Experiments of ſeveral diligent Husbandmen in moſt Countries, and have not only improved them, but added many uſeful Experiments of my own, which, having tried, I can therefore write upon ſurer Grounds than thoſe, who tho' they have writ more learnedly on the ſame ſubject, yet being only contemplative Men, and having had but little or no Experience of their own, have often erred.

I have endeavoured, throughout the whole Book, to expreſs my ſelf in as few words and plain a Stile as I could, for the Benefit of Vulgar Readers, the Culture of Lands being left almoſt intirely to their Management.

If it ſhould fail of giving general Satisfaction, yet I hope it will at leaſt furniſh abler Pens with Materials for a more complete Diſcourſe. However, ſuch as it is, I freely ſubmit it to your Cenſure and Correction, and do my ſelf the Honour upon this Occaſion to declare that I am

Your moſt humble and

moſt obedient Servant,

J. Mortimer,

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Advertiſement.

BY reaſon of the Author's diſtance from the Preſs ſeveral *Errata* have eſcap'd, which the Reader is deſired to correct.

All Gentlemen who have Collected any Obſervations relating to Husbandry, and the Improvement of Lands, are deſired to tranſmit the ſame to the Author hereof, directing their Letters to be left with *H. Mortlock*, or *R. Robinſon* Bookſellers in St. *Paul*'s Church-Yard, and ſuch Obſervations ſhall be Printed in the next Edition of this Book, for the good of the Publick.

The ART of HUSBANDRY; Or the Way of Improving of LAND.

BOOK I.

Chap. I. *Of Incloſing of Land.*

THE great Improvements that have been made of late in *Husbandry*, and the ſmall Collections that are extant of them, with the difficult Reception that theſe Improvements meet with, becauſe of the Ignorance of ſome, and the wedded Opinions of the Generality to the Cuſtom and Practice of their Neighbours, will be a ſufficient Juſtification of this Undertaking: The Deſign of which is, *Firſt*, To give an Account of the common Way and Method of Managing of Land, and the ſeveral ways of Ordering the various ſorts of Grains; and *Secondly*, To ſhew what new Improvements have been made, and what different Methods are uſed in moſt Places, and upon what Sort of Land, with the Reaſons of ſuch Improvements, that ſo every one may be able to judge of their own Practices; and to ſee what Additions are neceſſary and moſt reaſonable to be made uſe of for the Improvement of their Intereſt.

For Labour and Induſtry being the chief things to make Land valuable, it concerns the judicious Husbandman to conſider the Nature of the Land he is to ſpend his Time, Coſt, and Labour upon, and whether it be fit for Meadow, Paſture, Corn, Orchard, or Gardens; and likewiſe what Sort of Beaſts or other Animals 'tis beſt to ſtock it with, and what Sort of Pulſe, Trees, Fruits, *&c.* is beſt for each particular Soil: and likewiſe the particular ways and ſeveral Methods uſed to improve and manage Land to the beſt Advantage, with the Coſt and Produce of it: Concerning all which Particulars, I ſhall endeavour to give as plain and diſtinct Directions as I can; and in order to it begin with the *Incloſing of Land*, as what lays a Foundation for Induſtry and good Husbandry; becauſe of the Security it gives a Man in the quiet poſſeſſing the Benefit of his Labour and Care. I ſhall wave the Diſputes that have been produced to prove the *Advantages*, or *Diſadvantages* of Incloſures and open Fields; becauſe I think theſe two things alone ſufficient to prove the Advantage of Incloſures, without making uſe of any other Arguments, *viz.* Firſt, the great Quantities of Ground daily incloſed; and Secondly, the Increaſe of Rent that is every where made by thoſe who incloſe. And therefore the Method that I ſhall follow ſhall rather be to give an Account of the ſeveral Sorts of Fences, the Cuſtoms and Uſages about them, and the Manner and Way of propagating of them, with the Coſt and Charges of their making; than to endeavour the Conviction of thoſe that matter of Fact is not able to make ſenſible of their own Advantage.

For Incloſing of Land the moſt uſual way is with a Ditch and Bank ſet with Quick. In Marſh-Land, where is plenty of Water to fill them, they content themſelves with Ditches alone. In *Cornwall* and *Devonſhire*, they make as it were two Walls with flat Stones, laying of them one upon another, firſt two, and then one between, and as it riſes, they fill the ſpace with Earth, which binds it together, and ſo they continue the Stone-work, filling of it to what height and breadth they pleaſe, beating of the Stones in flat to the ſides, which makes them lie very firm, and is the beſt Fence of any, where flat Stones are to be had, and what beſt ſecures the Ground and Cattle. Upon theſs Walls they plant Quick and Timber-trees, which thrive exceedingly. In the North-Country, and ſeveral other places where are abundance of flat Stones, they make Fences of them by laying of them one upon another like a Wall, and only lay the Top-ſtones in Clay to keep them together, the Weight of which ſecures the under ones: But as I have no particular Account of theſe Sort of Fences, nor of their Coſt or Duration: ſo I ſhall defer mentioning of them, till I have, and at preſent treat only of the Quick-Fence, and ſome others that I have had experience of.

In Marſhes where there are no Hedges they allow the Ditches to be ſix Foot wide, againſt High-ways that are broad, and againſt Commons five Foot: But the common Ditches about Incloſures are three Foot wide at the Top, one at the Bottom, and two Foot deep, that ſo each ſide may have a Slope and not be upright, as they make them in many places, which are always waſhing down. Beſides, in a narrow bottom'd Ditch, if Cattle get into it, they cannot ſtand to turn themſelves to crop the Quick; but where the Ditch is four Foot wide, it ſhould be two Foot and a half deep; and where 'tis five Foot broad, three Foot deep: And ſo on in proportion.

White-Thorn. I ſhall begin with the *White-Thorn*, as the beſt Quick to plant, and becauſe 'tis the moſt common, and eſteemed the handſomeſt and beſt Fence. It will ſuit any Soil where a new Ditch and Bank is made, except the dryeſt Gravel and Sand, and will often grow upon that too, if it prove a wet Year. 'Tis raiſed of Seed, or Plants; but Plants are the quickeſt way, the Seeds lying two Years in the

Ground before they ſpring; but they grow very faſt after two or three Years. Where Sets are ſcarce, when you fell your Under-woods, or rather the Year before, ſow Haws and Sloes in them, and they will furniſh you without doing of your Wood any hurt, becauſe you may draw them before they come to be big.

Black-Thorn and Crab.

Next to the *White* is the *Black-Thorn* and the Crab, which make a very good Fence, and is raiſed as the White-Thorn; only if you ſow Apple or Crab-kernels, ſow the Pummace with them, they will come up the firſt Year. BlackThorn is not reckoned ſo good for Fences as the White, becauſe 'tis apt to run more into the Ground, and is not ſo certain of growing; but then the Buſhes are much the beſt, and moſt laſting of any for dead Hedges, or to mend Gaps: Nor are Cattle ſo apt to crop them as the other. They will grow upon the ſame ſort of Soil with the White-Thorn; but the richer the Mould is, the better they will proſper.

Another good ſort of Fence is the *Holly* which were to be preferred before any other, were it not for its ſlow growth, and the difficulty that there is in getting of it to grow at firſt: But afterwards it makes amends by its Thickneſs, Strength and Height. 'Tis raiſed by Sets or Berries, like White-Thorn; and lies the ſame time in the Ground before it comes up: It will grow upon the dryeſt Gravel, or amongſt Stones or Rocks; and it delights moſt in light Grounds. If you raiſe it by Plants, let them be about the Thickneſs of your Thumb. Plant them in a moiſt Seaſon in Autumn or in Spring, and take particular care to ſhade them well with Hawm or Straw, and water them 'till they begin to ſprout. If any of them ſeem to periſh, cut them cloſe to the Ground, and they will ſpring from the Roots. Keep Sheep from them, who are very deſirous of cropping of the young Shoots; and dig about their Roots, which will very much help their growth; but by no means lay any Dung near them.

The beſt way of planting of them, is to mix them with the White-Thorn, and to let every fourth or fifth Set be a Holly, by which means, they thrive beſt, and afford a ſpeedy Fence. As the Holly grows you may pluck up the Quick, and if need be increaſe the Thickneſs of the Holly by laying of Layers from it. Some propoſe to take a well-rooted Set of a Yard long, and ſtrip off the Leaves and Branches, which, covered with a competent depth of Earth, will ſend forth innumerable Quantities of Suckers, and quickly make a Hedge.

Holly may likewiſe be raiſed of the Berries, which as they lie 'till the ſecond Spring before they come up, may be ordered as hereafter is directed for Seeds of that Kind; but as they are a hardy Plant, I think it beſt to ſow them in the place where you deſign them to grow, only you muſt mind to keep the place well-weeded before they come up, as well as afterwards. Mr. *Evelyn*, ſays the Seeds ſhould be picked when they are ready to drop, and that the tenacious glutinous Mucilage that is on the out-ſides of them ſhould be rubbed, and waſhed off, which, he ſays is of great Advantage to cauſe them to take; and Mr. *Cook* ſays, they may be raiſed by Layers. The Timber bears a great price with the Cabinet-Makers, when large, for inlaying; it being the whiteſt of all hard Woods.

Where you have any thing of a good Soil, you may take *Elder*-ſticks or Truncheons ten or twelve Foot long, and ſtick in your Bank ſlope-wiſe each way, ſo as to make a Chequer-work; it will make the ſpeedieſt Fence and the quickeſt ſhelter for Gardens of any whatever. 'Tis a Wood very uſefull for Turners and Inſtrument-makers, vying even with the beſt Box, and for many Uſes ſurpaſſing of it.

Alder makes an extraordinary Fence againſt Rivers and Streams, and preſerves the Banks from being undermined by the Water, becauſe 'tis always ſending Suckers from the loweſt Roots, which makes *Alder.*

it

it very uſeful where Streams wear away the Banks, and are widening of their courſe.

Furze. Where there are old dry Banks, or ſuch a dry Sand or Gravel that nothing elſe will grow on't, the *Furze* is an extraordinary Fence. 'Tis raiſed by Sets or Seeds; but ſeeds are the beſt way of raiſing of it, eſpecially the *French* Furze which grows to the height of fifteen or ſixteen Foot, and is not ſubject to run into the Ground, or to ſpread like the common Sort: It will make a Hedge in three Years time if well-weeded, and carefully kept from Cattle, eſpecially Sheep who are great devourers of it, 'till 'tis of ſome bigneſs, and then nothing can hurt it. If 'tis clipp'd, it will do very well, and be very thick: But if let grow at large, it will be the better ſhelter, and yield excellent Fuel: They make very great advantage by ſowing of their Land with it in *Devonſhire*; but of that more hereafter. In *France* they make incloſures with it that they ſow ten or twelve Yards thick, which makes a mighty ſhelter for Game. I am told that Furze (whether *French* or *Engliſh*, I cannot ſay) will grow upon the Sand in Salt-water; if ſo, it will be a great Advantage to thoſe that have Walls or Banks next the Sea, to preſerve them.

Planting. In planting of Quick you are to conſider the Nature of the ſeveral Sorts of Land you deſign to plant it in, as whether it be Clay, Sand, Gravel, *&c.* and what ſorts of Plants will beſt agree with each ſort of Soil, and likewiſe the Soil you have your Plants from, and whether they are raiſed upon worſe Land than you deſign to plant them in, or elſe it will be more difficult to get them to grow well, and likewiſe the manner of planting of them: But as the ſame method is uſed in planting of one ſort of Quick as is with all the reſt, (except only in what I have already inſtanced) ſo I ſhall deſcribe only that of the *White-Thorn*, as being the common ſort that is moſt uſed.

For the Sets let them be about the bigneſs of your Thumb, and cut within four or five Inches of the Ground; and if you deſign your Quick only for a Hedge without a Bank or Ditch, let them be ſet almoſt perpendicular in two rows, at about twelve Inches diſtance from each other: but if you make a Ditch and Bank, mark your Ditch out the breadth mentioned before with a Line, and on that ſide you intend to make your Bank, lay the Turf with the Graſs-ſide downward, upon which lay ſome of your beſt Mould to bed your Quick in, and lay your Quick upon it, ſo as the end of it may be inclining upwards, laying them about twelve Inches a-ſunder; and be careful to procure thoſe that are freſh gathered, ſtreight, ſmooth, and well-rooted; adding now and then, at equal diſtances of about thirty Foot, a young Oak, Aſh, Elm, or Crab, to grow up with the Quick. When the firſt row of Quick is laid, cover it with more good Mould, and lay a Turf upon it as before, and ſome Mould upon the Turf, ſo as that when your Bank is about a Foot higher, you may againſt the Spaces of the lower Quick lay another row of Sets, which cover as you did the former, and top the Bank with the Bottom of the Ditch, upon which ſet the dry or dead Hedge to defend and ſhade the under Plantation. The Stakes are drove into the looſe Earth at two Foot and a half diſtance, ſo low as to reach the firm Ground. Oak-ſtakes are reckoned the beſt, and Black-Thorn and Sallow next; let the ſmall Buſhes be laid below, but not too thick, only a little to cover the Quick from the biting of Cattle when it ſprings, and the long Buſhes at the Top to bind the Stakes in with by interweaving of them, and to add a farther ſtrength to the Hedge you may edder it as they call it, which is to bind the Top of the Stakes in with ſome ſmall long Poles or Sticks on each ſide; and when the eddering is done, let the Stakes be new drove, becauſe the waving of the Hedge, and the eddering are apt to looſen the Stakes.

Your Quick muſt be conſtantly weeded and carefully kept from Cattle, eſpecially Sheep; and if you do not find it ſhoot well, or that it ſhould happen to be cropped with Cattle, cut it in *February* within an Inch of the Ground: This will cauſe it to ſtrike freſh Root, and often help it much in its Growth.

Hedges to plaſh.

When your Hedges are about eight or nine Years growth, about *October*, or (which is better) in *February*, plaſh them; but as the plaſhing of an old Hedge hath ſome particular things belonging to it that are not in a new, I ſhall ſuppoſe the Hedge to be of twenty or thirty Years growth, and that there are old Stubs in it as well as young Shoots, which old Stubs muſt be cut ſloping off within two or three Inches of the Ground, and as near as you can the beſt and the longeſt of the middle-ſized Shoots left to lay down; ſome of the ſtrongeſt of which may at five or ſix Foot diſtance be left at the height you intend the Hedge inſtead of Stakes; and where ſuch Stakes are wanting you muſt ſupply their room with Stakes of other Wood. When you have thinned your Hedge ſo as to leave on the Stubs only thoſe Shoots that you deſign to uſe, that you have room to put a Spade through them, begin and cleanſe your Ditch; keeping each-ſide ſloping as in a new Ditch; and where you find your old Bank hollow, or that the Earth is waſhed from the Roots of the Quick, face it (as they call it) with ſo much of the firſt ſpit of Earth, that you dig out of the Ditch as you need; the reſt, with what you dig out at the ſecond ſpit, lay upon the Top of the Bank, which which you muſt carefully ſee that the Work-men do: For it being more Labour, they commonly lay as much as they can upon the ſide or face of the Bank, the weight of which, when wet comes, commonly makes it ſlip into the Ditch again, and often brings a great part of the Bank with it; whereas what is laid upon the Top every time heightens the Bank, and makes any indifferent Hedge a ſtrong Fence. In the plaſhing of your Quick, avoid two extreams, firſt the laying of it too low and too thick, which makes the Sap run all into the Shoots, and leaves the Plaſhes without Nouriſhment, which with the Thickneſs of the Hedge kills them: Secondly, avoid the laying of them too high, as is commonly uſed in the *North*, which draws all the Sap into the Plaſhes, and ſo makes but ſmall Shoots at the bottom, and by that means makes the Hedge ſo thin, that it neither preſerves it ſelf from the Cattles cropping, nor prevents their going through: For which reaſon I prefer the middle-way uſed in *Hertfordſhire*, where are the beſt Hedges I have ſeen in *England*. When you have bent your Shoot that you deſign to plaſh, give it a ſmall cut with your Bill half way through, ſomething aſlope downwards, and then weave it about your Stakes, trimming off the ſmall ſuperfluous Branches on each-ſide of the Hedge that ſtraggle too far out: And if for the firſt year or two, you can plow or mow the Field where you make a new Hedge, it will give the better opportunity for the Hedge to grow and thicken; but where the Stubs are very old, 'tis beſt to cut them quite down, and to ſecure them with good dead Hedges on both ſides 'till the young Shoots get up tall enough to plaſh, and in the void places plant new Sets.

Bank-Fences.

But the beſt Fence and, I believe, the cheapeſt, conſidering the laſtingneſs and goodneſs of it, where flat Stones are not to be had, is in a graſſy place to dig ſome Turf a Spit, or near a Spit deep, the breadth of your Spade, and about four or five Inches thick; lay theſe Turfs with the Graſs outward, even by a Line on one ſide, and on the back-ſide of theſe lay another Row of Turf, leaving a Foot-ſpace of ſolid Ground on the out-ſide to prevent the Bank from ſlipping in, if the Ground ſhould any way be faulty; on the out-ſide of which you may make a Ditch of what depth or breadth you pleaſe, or you may lower the Ground on each ſide with a ſmall ſlope two Foot-deep, and then you will have no loſs of paſture by the Fence, becauſe it will bear Graſs on both ſides; and with the Earth that comes out of the Ditches or the ſloped places fill the middle of the Bank level with the Turf on each-ſide, and then lay two more Rows of Turf upon the firſt, and fill it again as before. This do 'till your Bank be four Foot high, or of what height you pleaſe, only your Foundation muſt be ſomething broader, if you make it higher; and you muſt obſerve on each-ſide to give a ſmall ſlope to the Bank, ſo as to make the Top about three Foot wide, upon which plant your Quick, making of the Top a little hollow to keep as much of the Rain to the Quick as you can, and plant your Quick about a Foot or more in depth; by this means you will have a Fence ſix Foot high, beſides the Hedge on it, which will (except in a very dry time) be always green on both ſides like a green Wall, and make not only a pleaſant Fence, but what will keep all Sorts of Cattle within their Bounds, and the Quick that you plant upon it will grow much better, than if planted any other way; and if any die (which it will hardly do) you may renew it when you will, or fill the Spaces by Layers from thoſe that do grow, and the Roots of the Graſs will bind the Turf ſo together, that in one Years time it will intirely become ſolid, that you cannot ſee the Joints, nor get one of the Turf out, and it will be much ſtronger when the Roots of the Quick come to bind it together too; only you muſt take care that, on or near the Top at the firſt making of it, on each-ſide to ſet a ſmall Hedge of about a Foot high to prevent the Sheep from running up it, and that you do not make it when the Earth is too dry; becauſe if a great deal of wet ſhould ſuddenly follow, it will cauſe the Earth to ſwell too much, and by that means may ſomewhat indanger the falling of ſome of the out-ſide, though I have made a great deal of this Sort of Fencing without having any of it fall: If it ſhould, 'tis eaſily repaired. This Fence in good digging Ground where Men work for Fourteen-pence a day, may be made and planted with Quick for two ſhillings a Pole; but if you deſign it a Fence to keep in Deer, at every eight or ten Foot diſtance, ſet a Poſt with a Mortice in it to ſtand a little ſloping over the ſide of the Bank about two Foot high; and into the Mortices put a Rail, which a Bough of a Tree or any thing will make; and no Deer will go over it, nor can they creep through it, as they do often, when a Pale tumbles down. The Quick on this Bank you may keep clipped, which will make it a fine Fence, and 'tis one of the beſt Fences to afford ſhelter for Cattle.

Having ſhown you how to incloſe Land, I ſhall in the next place conſider the ſeveral Sorts and Kinds of it, as they may be proper either for *Grazing*, *Corn*, or *Planting*, and begin with Paſtures and Meadows.

Chap. II. *Of Paſture and Meadow-Land.*

PAſtures and Meadows are of ſuch advantage to Husbandry, that many prefer them to Corn-lands, becauſe of the ſmall Hazard, Charge and Toil that attends them, and as they lay the Foundation of moſt of the Profit that can be expected from the Arable, becauſe of the Manure the Cattle afford: And indeed where Dung is not to be bought, or other Manure to be had, there ought to be a Proportion taken care of between the Paſture-lands and the Arable, that ſo ſuch a quantity of Dung may be raiſed as may be neceſſary for the Arable; or elſe the Arable-land muſt be proportioned to the quantity of Dung that is raiſed from the Paſture, becauſe proper Manure is the chief Advantage of Arable-ground.

Now all Feeding or Paſture-lands are of three Sorts; *Firſt*, Up-land, that is ſuch as lies ſo high as not to be over-flowed with Rivers or Land-floods; *Secondly*, Thoſe Lands that lie near Rivers or Fens, And, *Thirdly*, thoſe that lie near the Sea.

Up-land. Firſt, *Up-lands*, that lie either upon the Tops or ſides of Hills or Riſing-grounds, and conſiſt either of Sand, Gravel, Chalk, Rock, or Stone, Hazelly, Loam, Clay, or black Mould, and are beſt for Grazing, or Corn, according as they lie moiſt or dry; which depends much upon their Situation and Nature: Thoſe Lands that lie upon the Tops of Hills, and that lie flat, are commonly the dryeſt; and thoſe upon the ſides, the moiſteſt; becauſe of the Moiſture that continually is ouzing out of them: And ſo likewiſe the Chalkey and Clay-lands are moſt apt to be moiſt, eſpecially in Winter; becauſe they retain the Moiſture a long time, though they have alſo the inconveniencies of the Sand, Gravel, Rocky and Stony-lands, to burn in hot Weather, to chap in Summer, and poach in Winter. The black Mould and ſome of the hazelly Loams are the beſt for Graſs, and Corn too, eſpecially if the latter is not ſubject to Worms; becauſe they neither chap, poach, nor burn. Too much or too little Water is almoſt equally prejudicial to Meadows, but the beſt Lands for Meadows or Paſture are either low Lands, or hanging Grounds, or any rich Soil that hath a moiſt Bottom, eſpecially where any thing of a little Brook or ſome running Spring may be brought over it, and where there is ſome deſcent in the Meadow, that the Water may not lodge on it: Theſe Meadows are much better than thoſe by great Rivers, where Crops are often loſt. The worſt of Up-land Meadows is that they often need mending or feeding, which the other never do; but then the Hay of the former is much finer, than that of the low Lands.

As the Improvement of theſe Lands is the ſame with that of the Arable; ſo I ſhall defer treating of it 'till I come to treat of the Improvement of Corn-lands: Only you muſt note, that as the Dung that is laid on Arable-ground is harrowed in with Harrows; ſo that Dung that is laid on Paſture ſhould be well harrowed in with a great Buſh, or with a Gate ſtuck full of Buſhes; and that all Dung that is laid on Paſture-land muſt be done in Winter, that the Rain may waſh the Fatneſs of it into the Roots of the Graſs before the Sun dries it away. Many commend ſomething of Mould mixed with Dung to be better than Dung alone, becauſe it waſheth better to the Roots of the Graſs, and incorporates with the Earth: But the beſt Manure for Meadows, is the Bottom of Hay-mows and Hay-ſtacks, becauſe of the Mould 'tis compoſed of, and the Hay-ſeed that 'tis mixed with, which will both mend the Land and increaſe the Graſs; for which reaſon due Care ought to be taken not to mix any Hay-ſeed with the Dung-hills that you deſign for Corn-ground, becauſe 'tis apt to breed Graſs and Weeds on them.

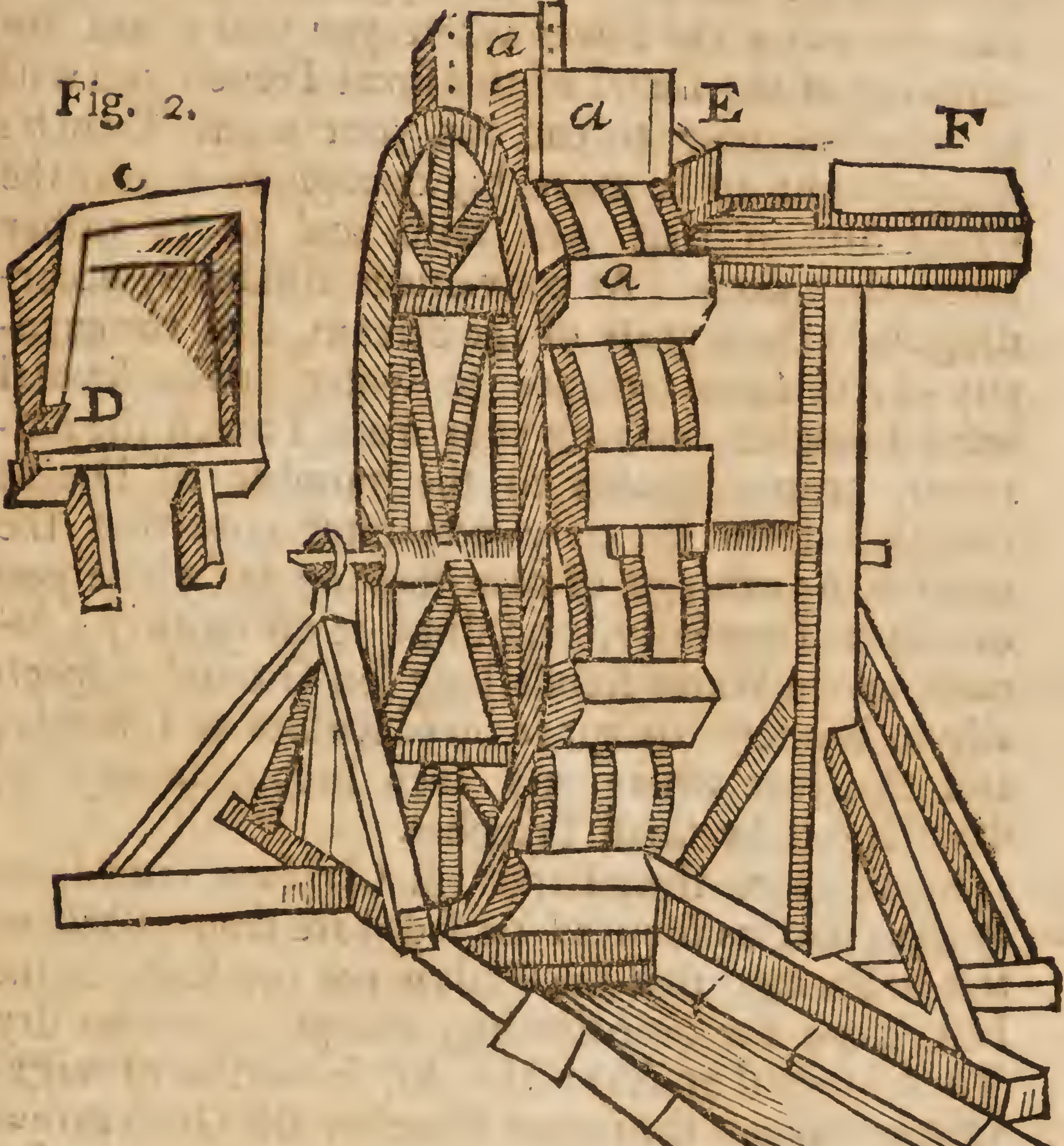
Marſh-Land.

A ſecond Sort of Grazing-ground is that which lies near *Rivers* or *Fens*: As to Lands lying near Rivers, the great Improvement of them is their over-flowing, which brings the Soil of the Up-lands upon them, ſo as that they need no other mending though conſtantly mowed. The great Inconveniency of theſe Lands, is their being ſubject to Summer-floods; which high Hills near the ſides of the Rivers, and the long Courſe of them beſpeaks to be frequent; and though near ſuch Rivers is commonly the Richeſt Land, yet there is the moſt danger of the Crops being ſpoiled, eſpecially where they are not incloſed, that they may be fed with Cattle; which I think much the ſafeſt way of managing of theſe uncertain Lands, eſpecially when feeding Cattle bears any thing of a Price: But the moſt advantageous Sort of theſe Lands are thoſe that may be over-flowed or laid dry, as you find occaſion, that you may improve them with the Winter, and keep out the Summer-floods, when the Graſs is long: But as only particular Situations will afford theſe opportunities; ſo there are but few places will allow of all theſe Advantages: But as all Sorts of Over-flowings are of great advantage to Land, ſo I ſhall endeavour to give a particular Account of the Method of it.

§. 1. *Of Over-flowing of Land.*

This is commonly effected by diverting the Streams of Rivers, Brooks, Land-floods, or Springs, or ſome part of them, out of their natural Chanel: But where the Streams lie ſo low as to be incapable of over-flowing the Lands, they are made uſe of to turn ſuch Engines as may raiſe a quantity of Water to do it: The beſt and cheapeſt Engine for the effecting of which is the *Perſian* Wheel, which may be made of what bigneſs you pleaſe, according to what height you would have the Water raiſed, and the Strength of the Stream that turns it. At *a a a*, &c. are ſeveral Boxes ſet round the Wheel that turns it and raiſes the Water; at *Fig.* 2. is a particular Deſcription of the Boxes as open, the flat Side of which is turned againſt the Stream; C ſhews the ſide that dips the Water; and at D is the place where the Water runs out when the Wheecomes to the height of E, at which place is a Trough at F to carry the Water off; and where Streams are not to be had, the Wind is made uſe of for the ſame purpoſes to work Pumps and other Engines: But as Lands near unto or bordering upon Brooks or ſmall Rivers admit of greater Falls and Deſcents, than bigger Rivers do, which commonly run more ſlow and level; ſo they do often give opportunity

Fig. 2.



nity for theſe Improvements, whereas the other doth it very rarely; but when it can be effected, large Streams make the richeſt Lands, becauſe the large Rivers are uſually the fruitfulleſt (as I ſaid before.)

When you have got your Water up to the higheſt part of the Land, that you can bring it to, make a ſmall Trench to carry ſome of the Water in, to give you

Trenches to carry.

you the level of the Land, keeping of it always as much as you can upon a level, or upon the higheſt Part of the Land, that ſo from the upper Part you may be able to water the lower when you will; and by carrying of the Level of this ſmall Trench you will be directed how to cut out your main Trench; which ought to be made big enough to receive the whole Stream that you raiſe, and to be rather broad than deep. At convenient diſtances, according unto the bigneſs of the Stream, and the quantity of the Land you are to water, make ſeveral ſmall Trenches, making your main Trench the narrower, proportionable to the number of Drains you lead from it; only you muſt note that the greateſt Advantage of over-flowing is, where you can do it frequently, and draw it off quickly; becauſe where Water ſtands long on Ground, eſpecially in Winter, 'tis apt to breed Ruſhes and Weeds; and therefore where any ſuch Inconveniency is, draw it off by ſmall Trenches.

Times of Over-flowing.

Some graze their Land 'till *Chriſtmas*, and ſome longer; but as ſoon as 'tis fed bare from *Alhallowtide* to Spring, that the Graſs is not too high, is the beſt Time for over-flowing, except it prove a dry Time in *April* or *May*: If it do, it will be of mighty Advantage; for in hot Weather the Graſs grows three times as faſt if moiſtned, as at other times. Land-floods are beſt to over-flow with in Winter, and Warm fatning Springs in Summer; only you muſt obſerve to let the Water dry in before you water it again, and not to let Cattle poach it; and that you water it at Night ſo as the Water may be gone before the heat of the day comes, which is apt to occaſion the ſcorching of it, and to rot the Roots of the Graſs by lying too long on the Land. The waſhings of High-ways, of Towns, or Streets, eſpecially of Commons, where Sheep feed, is a very great Improvement of Land or Trees.

Barren Springs.

In ſome places are Springs whoſe Waters are injurious to Land, as ſuch uſually are that flow from Coal-mines, or any ſulphureous Mineral, becauſe they are of ſuch a brackiſh, harſh Quality, that they kill Vegetables, inſtead of nouriſhing of them; as too much Salt, Urine, or Dung will do, if not applied in due Quantity. Yet I cannot but think but even theſe Waters would make a great Improvement, if ſparingly uſed, and in wet times, that a great Quantity of other Waters might mix with them. Theſe Waters are commonly of a reddiſh Colour, and leave a reddiſh Sediment where they run, and are much better when they have run ſome diſtance, than at their firſt breaking out.

Some Lands not improved by watering.

Alſo ſome Sorts of Lands will not be improved by watering, except with Land-floods, and in Summer, when 'tis a very dry Time, as your cold Clay, and ſtrong Lands that lie very flat, partly becauſe of their cold Nature, and partly becauſe of their Flatneſs, and becauſe Water will not eaſily penetrate ſtiff Clay; and therefore light dry warm Grounds are the moſt improved by watering; but as ſome Lands are improved by overflowing, ſo the chief Improvement of others is by draining; as,

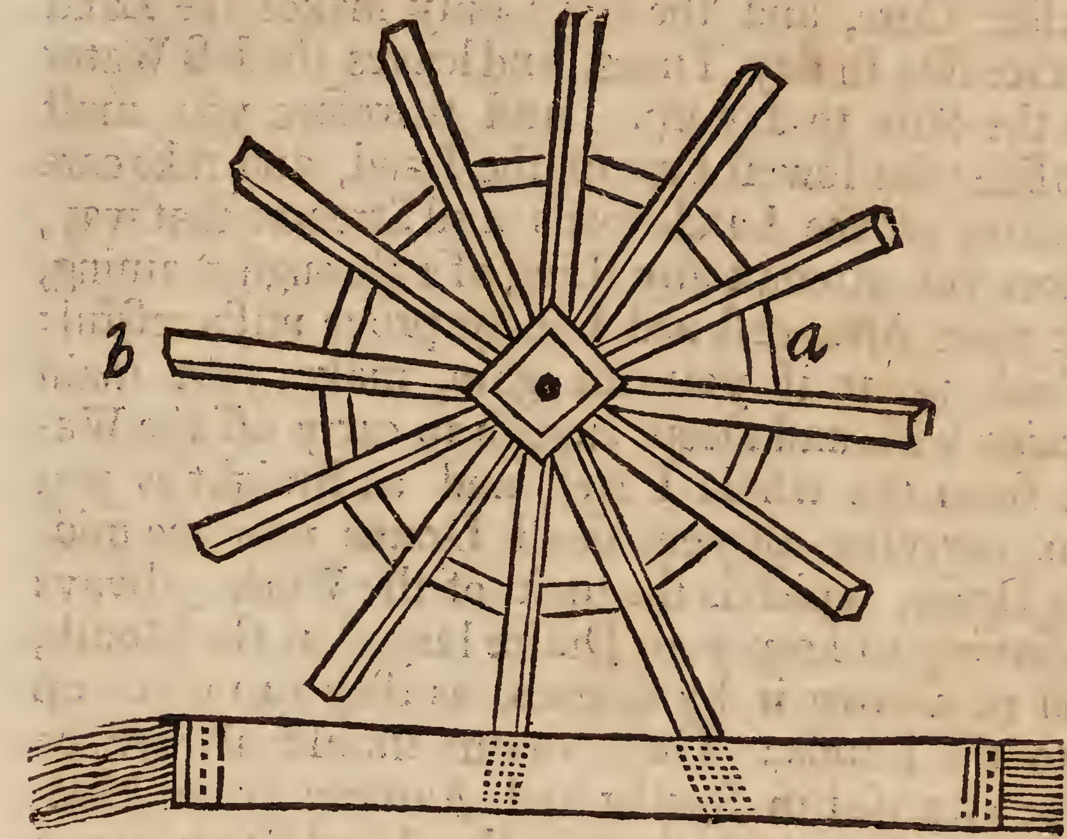
§. 2. *Boggy Lands, and Lands lying near Fens.*

Boggy Lands are of two Sorts; *Firſt*, Thoſe that lie between Hills which commonly have deſcent enough to drain them. *Secondly*, Thoſe which lie in flat Levels and Fens; but theſe being part of the Fens, I ſhall refer the Deſcription of them 'till I come to treat of Fenny Lands. Boggy Lands are fed by Springs pent by a Weight of Earth that dams in the Water, and cauſes it to ſpread in the Ground ſo far as the Earth is ſoft. Therefore you muſt obſerve where your loweſt place is, and what deſcent you have, that ſo you may cut through the Earth deep enough to take all the Water away from the bottom of the Bogg, a Spit below the Springs, or elſe your Work will be but of little value. In ruſhy Grounds the Springs are moſt commonly found at the firſt or ſecond Spit, where any thing of ſmall Gravel or Stonyneſs is to be found, and ſometimes lower in a hungry Gravel: But 'tis always lower in boggy Land than ruſhy, and is deep according to the Weight of Earth that penns it in. The beſt way is to begin the Drain at the loweſt place, and ſo to carry it into the Bogg towards the Spring-head, where you muſt make ſuch Trenches either round or croſs the Bogg as you ſhall find neceſſary to drain it throughly. If your Drains be deep, that you fear Cattle falling into them, fling in Stones and Brick-bats, and cover them with Wood, Flags, Turf, *&c.* laying the Earth upon it again, and the Water will drain between the Stones: But whatſoever Drains or Trenches you make that you leave open, never lay your Earth on heaps by the ſides of them as moſt do; but let the Earth be flung as far from it as you can, or ſpread in low places that are near, if your Trenches are ſmall: But where large, and the Work is not too great, carry it away in Wheel-barrows or Carts, where the Ground will allow of it.

§. 3. *Of Fenny Lands.*

Fenny Lands are of two Sorts; *Firſt*, Thoſe that are only drowned by Up-land Floods and great Rains, and are very large, and upon great Levels, that the Water cannot run off from them 'till the dry Weather helps to dry it up: *Secondly*, Thoſe that are conſtantly wet, only in dry Times they are ſhallower than in wet. Now in draining of either of theſe Sorts of Lands you muſt conſider two things, *Firſt*, The laying of them perfectly dry, which can only be effected by the way before propoſed for the draining of boggy Land; or *Second-*

ly, Only the taking off from them the Land-floods, Rains, *&c.* that fall on them: The one makes a perfect Cure, and the other only makes the Land ſerviceable in dry Times, and leaves the leſs Water for the Sun to dry up. And therefore you muſt conſider the loweſt Part of the Land, and take care to carry off the Land-floods and Streams that way, before you attempt any thing of a through draining, leſt your After-coſt and Labour prove unſucceſsful: Which point if you can gain, make your main Drains wide and Deep enough to carry off the Water from the whole Level, and as ſtraight as you can, carrying all your ſmall Drains into the middle Drain, which is the main of the Work; always obſerving to keep your Drains largeſt at the Mouth, and to narrow it by degrees, as they run more up into the Lands: Theſe drains ſhould always be kept cleanſed in Spring and Autumn from Mud, Weeds, *&c.* And though the Land-floods are a great Improvement of any Land where a vent can be had for them; yet where you cannot have it, becauſe of the Waters meeting with a full ſtop, ſo that it muſt be raiſed with artificial Engines; the beſt way is to turn all the Water you can from it, and to meet the Land-floods upon the higher Grounds where they may be taken ſo as to be carried into Rivers and Channels that lie higher than the Level of the Fens, that ſo you may have the leſs Water to raiſe with Engines; the beſt Sort for which purpoſe that I have yet met with (this being a particular that I ſhould be glad of having more intelligence about from any that will be ſo kind as to ſend any ſuch thing to the Publiſhers) for the draining of Lands is the following Wheel, much uſed in *Lincolnſhire* to drain the Fens, which is turned with large Wind-mill ſails, and are made proportionable to the ſtrength that is to turn them. 'Tis a vaſt quantity of Water that their turning will row along upon a flat, where the Water is not

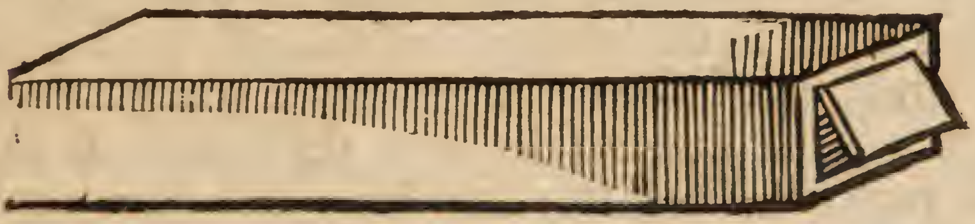


to be raiſed any height, the Spoaks being made broad, and ſet a little ſloping the better to row the Water, as you may ſee in the Figure, which Spoaks are exactly fitted to move between two Boards; but when they are to raiſe the Water any ſmall height above the Level, the Spoaks are made hollow like Scoops, and ſet ſo as to deliver the Warer at that height; but if the place requires the caſting of it over a Bank that is of any great height, the end of the Spoaks are made like Boxes; which as the Wheel riſes lets the Water run into the Circle at *a*, which is made hollow to receive it: And a Chanel being made on the Back of the Spoaks delivers the Water at *b*, as the Wheel deſcends.

If any Dryneſs appear on the Surface of the Levels, and that there are Springs left, ſearch for them; and when you have found them, order them after the ſame manner, as you were to order the boggy Land; But if any ſmall Hollowneſſes remain

main that do not dry, you need not trouble your ſelf about them, if there be no Springs in them that may cauſe their over-flowing in Winter.

They have a very good way in *Eſſex* of draining of Lands that lie below the High-water, and that are ſomething above the Low-water-mark; that have Land-floods or fleets running through them, which make a kind of a ſmall Creek. Theſe Lands when they firſt incloſe them from the Sea, they do it with a Bank which they make from one ſide of the Land they deſign to take in, to the other, except a Space that they leave, where the Creek or Land-floods run into the Sea: This when they begin to ſtop, they do at once with a ſtrong firm Head; only according to the the Quantity the Water that they have to vent, they lay in it ſeveral ſquare Troughs which are compoſed of four large Planks of the ſame length that they deſign the Thickneſs of the Head to be, and towards the Sea is fitted a ſmall Door which opens when the freſh Water bears upon it, and ſhuts when the ſalt Water riſes, as may be ſeen in the following Figure, that End where the Door is being put next the ſalt Water. Theſe Marſhes are commonly very good Land, and furniſh Cattle with good Water; which is a thing much wanting ſo near the Sea, where theſe Marſhes commonly lie.



Mills are in many places a very great prejudice to Land near Rivers, by damming up of the Waters, and by keeping of them continually wet. Where you have any ſuch inconveniency, though you cannot draw the Water down becauſe you are not owner of the Mill; yet you may at ſome diſtance from the River make drains to carry off the cold Water that prejudices the Roots of the Graſs, into ſome place of the River below the Mill, which will be but a ſmall Charge; and will much help your Land from being chill'd with the continual Coldneſs of the Water.

§. 4. *Of Marſhes near the Sea.*

A third Sort of grazing Ground is that near the Sea, which is commonly very rich Land: But as theſe Lands commonly lie very flat, ſo 'tis neceſſary to keep all the Water you can from coming upon them; eſpecially that of the Sea, which is many times done at great Charges, according to the length, breadth, and heighth of the Walls, which muſt be proportionable to their being expoſed to the Waves of the main Sea, or of a broad or narrow Creek or River, and of the Riſe of the Tide. Two main things that are commonly wanting in theſe Lands are good Water and good Shelter; which may be helped in many places by making of good Ponds to hold the Rain-water, and by planting of Trees and Hedges, which in moſt places would be of great Advantage to the Graſs to ſhelter it from the Sea-breezes; which often in theſe Lands, in the Spring, will cut off the Tops of the Graſs, as if mowed, eſpecially in the Northern-parts. Theſe Lands fat Cattle the ſooneſt of any, and preſerve Sheep from the Rot: But they would be much better for all Sorts of Cattle than they are if they were better ſheltred; and where they cannot be incloſed round, if in the middle of the Marſhes, Banks were caſt up in Form of a Croſs, or in the Form of two half Circles, that they might be a ſhelter for Cattle, let the Wind blow which way it will, and planted with Hedges and Trees for Cattle to get behind in ſtormy Weather, it would be a great Advantage to them.

Upon the Sea-coaſt are a great many Parcels of Land that would pay well for the taking in, as about *Boſton*, *Spalden*, and other Parts of *Licolnſhire*, where the Sea falls off from the Land; ſo as that upon the outſide of the Sea-walls on the *Owſe* (though every Tide covers it with ſalt Water) grows a great deal of Graſs, and the *Owſe* is firm to ride on, even when the Water is upon it. This *Owſe* when taken in, hardly ſinks any thing at all, and they dig the Earth for the Walls on the out-ſide of it, which the Sea in a few Tides fills up again; and though the Sea at High-water comes but to the Foot of the Bank, yet once in a Year or two ſome extraordinary Tides go over the Banks, though they are ten Foot high, fifty Foot broad at the Bottom, and three at the Top, for the making of theſe Banks they give twenty ſix Shillings a Pole, the Earth being all carried in Wheel-barrows, and the Face of the Bank next the Sea turfed, on which ſide is the chief Slope. Whereas in *Eſſex* about *Malden*, *&c.* the *Owſe* is like Mud, and ſo ſoft that you can hardly tread on it, bearing nothing but a few Weeds; and if they dig any thing of a hole in the *Owſe* on the out-ſide of the Bank, if 'tis any thing near, the Sea will inlarge it ſo as to undermine their Walls: For which reaſon they take all the Earth that they make their Walls with from the In-ſide; and though the Tide commonly comes up to the Foot of the Bank, yet they keep out the Spring-tides there with a Wall of four Foot high, three Foot broad at the Top, and ten or twelve Foot at the Bottom; which Walls they have made for four Shillings a Pole. This Sort of *Owſe* when it comes to be incloſed, ſinks three Foot deep. One Acre of theſe Lands I have obſerved not to be in proportion to the diſtance each are from *London*, of above half the Value that thoſe are that are gained from the Sea in *Lincolnſhire*.

§. 5. *Of Lands overflowed by Sea-Breaches.*

Though Salt moderately uſed is a very great Improvement of freſh Lands, yet too much kills all Sorts of Vegetables. Therefore as ſoon as your Breaches are ſtopped, make Trenches, and draw the Salt-water off as ſoon as you can into ſome low Place; where by an Engine, or otherways you may caſt it over the Bank into the Sea, or into ſome waſt Ground, except 'tis ſo ſmall a Quantity as the Sun will ſoon dry up; and lay as much freſh Earth or Mould upon it as you can to abate the Saltneſs of the Earth, plowing of it three or four Years to let the Rains and Air into the Land to freſhen it.

As to what relates farther to the over-flowing of Land, making of Drains, Sea-walls, with an Account of particular Engines for ſuch Works, with the Coſt and Charges, and the Nature of the Land taken in, *&c.* if any that are willing to incourage this Work will communicate them to the Publiſhers, they ſhall be added either with mentioning of their Names that ſend them, or not, as deſired, and be inſerted as Additions to the Appendix; that ſo againſt the publiſhing of it, I may be able to give the fuller Account of theſe Particulars.

All theſe Sorts of grazing Grounds are commonly ſtocked the beſt with the largeſt Oxen, Cows, and Sheep; the Middle-ſort with a leſſer Size; and the more barren with Sheep alone; the rocky with Goats, and the worſt with Rabbits: For nothing is of greater prejudice to the Farmer than the ſtocking of his Land with Cattle, that are larger than it will bear.

Chap. III. *Of the Making of Hay.*

WHAT Up-lands you deſign for mowing, ſhut up the beginning of *February*; but your low Meadows and Marſh-lands you need not lay up 'till *April*, except the Spring be very wet, and your Marſhes very poachy. Many feed them 'till the firſt of *May*, eſpecially thoſe that are in danger of over-flowing. In Spring let all the Sticks, Stones, and other Trumpery, be picked up, and the Mole-caſts ſpread, becauſe they will elſe hinder the Mowers: And if your Meadows lie any thing uneven, or have been poached in Winter, rowl them with a large wooden Roller; then the Mowers will be able to cut much the cloſer, and the Quantity of Hay will anſwer the Trouble.

For the time of mowing of Graſs, it muſt be according to the Growth or Ripeneſs of it: Nothing is more prejudicial to your Crop than mowing of it too ſoon, becauſe the Sap is not fully come out of the Root; and when 'tis dry, it ſhrinks away to nothing, Nor yet to let it ſtand too long, 'till it have ſhed its Seed, and that all the Sap is dried up, which only is the nouriſhing Part of it for Cattle; and therefore to know when Graſs is fit to cut, look carefully upon it, and when you ſee the Top thereof look brown, and begin to bend the Heads, and that the red Honey-ſuckle flower begins to wither, which will commonly be about the Middle or latter End of *June*, you may conclude it ripe. As ſoon as your Graſs is mown, if there is plenty of it, that it lie thick in the Swath, ſo as that neither the Air nor Sun can paſs freely through it, cauſe your Hay-makers to follow the Mowers, and to caſt it abroad (except you fear wet; if you do, let it lie upon the Swath) this they call *Tedding* of it. At Night make it into Graſs-cocks, the next Day as ſoon as the Dew is off the Ground, ſpread it again, and turn it, that it may wither on the other ſide; then handle it, and if you find it dry, make it up into Cocks. Next Day ſpread it again, and draw it into long Rows, which they call Win-rows, which is a convenient way to dry the Hay, and makes it eaſie to get together again, in caſe of Rain, to make up into large Cocks which will ſecure it from wet, though you let them ſtand a Day or two. Be ſure, before you carry your large Cocks in, to open them once, and to ſpread them in the Sun, becauſe 'tis apt to give in the Cock; and if any Rain happen to fall on your Hay, do not turn it 'till the upper-ſide be dry: For to turn the wet Graſs to the moiſt Earth is the readieſt way to rot it; neither open any of the Cocks, 'till the out-ſide of them is dry. Where thick leaved Weeds are amongſt the Graſs, they will need more drying than ordinary Graſs doth; and when you have good Weather, put in all the hands you can, that you may obſerve the old ſaying, of making Hay when the Sun ſhines.

Mowing of Land too often and too long is a very great prejudice to it, except it be Land that is conſtantly mended with Water-floods: and therefore where you have not that Conveniency once in three Years, or every other Year, feed your mowing Lands, if you cannot get Manure conſtantly to keep them in heart. For feeding is as neceſſary for Hay-ground, as fallowing is for Corn-grounds. I ſhall not ſay any thing of After-crops, becauſe I think them neither good for the Land, nor yet the Hay good for Cattle.

Chap. IV. *Of ſeveral Sorts of Graſs-ſeeds.*

I Shall not ſay much for the recommending of theſe Graſſes, becauſe moſt by experience know their Profit; but only teach you how to manage them, and then deſcribe their ſeveral Kinds.

In ſowing of all Sorts of Graſs-ſeed, let your Land be plowed more than once, to kill the natural Graſs and Weeds, which elſe are apt to choke them; and they muſt be ſowed after the Corn that you ſow with them, ſo as to harrow the Land but once over after 'tis ſown, which is beſt done with a Buſh or a Gate ſtuck with Buſhes.

§. 1. *Of Clover-Graſs.*

Clover-Graſs. Of the ſeveral Sorts of theſe Kinds of Seeds, that which the Precedency is commonly given to, is the *Clover-graſs*, for the great Improvement it makes upon Land, the Goodneſs of its Hay, and the Profit of its Seed, which moſt Authors give a very great Account of the Advantage of: But as they are ſilent about the Nature of the Land, that theſe great Improvements have been made upon, and of the particular Way of ordering of ſuch Lands; ſo their Accounts are very ſhort in reſpect to the particular Application that might elſe have been made to Lands of the ſame Kind: But the great Advantage of Clover is, that it improves Land by the great Quantity of Cattle it maintains, and fits it for Corn again in two or three Years time, it being one of the beſt ways of improving moſt Sorts of Lands, eſpecially Clays, where Manure is ſcarce, and therefore much uſed in *Suſſex* and other clay Countries.

Sorts. Clover is of ſeveral Sorts; the great Clover is reckoned the beſt, whoſe Seed is like that of Muſtard, except in that it is rather oblong than round; the Choiceſt of which is that of a greeniſh yellow Colour, ſome of it a little reddiſh; but the black is not ſo good. Our *Engliſh* Seed is the beſt.

Quantity. An Acre of Ground will require ten Pound of Seed, and ſome Land twelve Pound; 'tis better to ſow it too thick, than too thin: Some have ſown a great deal more with good Advantage. It delights moſt in a rich warm Soil, and ſuch Lands as are moſt Dunged, Marled, Limed, *&c.* as I ſhall ſhew hereafter. But the Clays that are long in ſwerding, and little ſubject to Weeds, are the beſt Land for Clover; becauſe in thoſe Lands that graze ſpeedily the natural Graſs eats it out, which all Sort of light Lands are ſubject to, and likewiſe to waſh from the Roots of the Clover, ſo as to leave them bare, which gives opportunity to the Froſt to kill it. But in the beſt Grounds it will not bear any thing of a good Crop longer than three or four Years.

The uſual way of ſowing of it is, either with Barly or Oats, after the Corn is ſown, which 'tis beſt upon this Account, to ſow ſomething thinner than ordinary. The uſual Time of ſowing of it is at the End of *March*, and in *April*, in a calm Day; but the beſt Time of ſowing of it in dry Lands, is with black Oats, as forward in the Spring as you can, that ſo it may get up while the Rains laſt, before the dry Weather comes; ſome ſow it with Wheat or Rye at *Michaelmas*, which gives it an opportunity of ſhedding of its Seed, and occaſions its growing thick and laſting longer; but then 'tis beſt ſowed upon dry Lands that will bear ſowing of both the Wheat and the Rye upon broad Ridges. This way 'tis moſt certain of taking, if it prove a mild Winter: But if hard Froſt and great Snows come, 'tis very hazardous; though ſome adviſe the ſowing of it alone at *Michaelmas*, which, they ſay, makes it come up freer from Weeds, than if ſown in Spring, and will cauſe it to get ſtrength enough to preſerve it ſelf againſt the Winter: And ſome ſow Ray-Graſs with the Corn at *Michaelmas*, and early in Spring ſow the Clover, which they cover only by rowling of it. Theſe ways are what I muſt confeſs I have not known the Experience of, but

Time.

but I am certain that the Froſt will not hurt the Root, if it doth not lie bare, though it will ſpoil all the Graſs; for which Reaſon moſt take care to feed it cloſe before the Winter comes on.

Mowing. About the Middle or End of *May*, you may cut the firſt Crop for Hay, which takes up more Time and Labour to dry than ordinary Graſs, and will go very near together; yet if it grow not too ſtrong it will be exceeding rich and good for the fatting of Cattle. The exact Time for the cutting of it is when it begins to knot. Some after the firſt Crop, mow two other Crops before Winter; but they ſeldom have Weather good enough to make the laſt Crop well; and therefore 'tis better to take but one Crop more, eſpecially if you deſign it for Seed, which you muſt let ſtand 'till thorough ripe, for it will not be very ready to ſhed. When you firſt obſerve the Seed in the Husk, it will ripen in about a Months time more; and when the Seed begins to change its Colour, and the Stalk begins to die, and to turn brown, and be of a yellowiſh Colour, mow it in a dry Time, and preſerve it as dry as you can: It ripens ſome Years ſooner than others; and therefore you muſt be guided by the Ripeneſs of it. If Clover is apt to wear out of your Ground, and you have a mind to continue it without new ſowing, mow it the latter end of *May*, and let it ſtand about three Months till it caſts its Seed, and then feed it with Cattle, and it will ſow it ſelf a Freſh, and come (as I am told) as thick as if new ſown.

One Acre of this Graſs will feed as many Cattle as five or ſix Acres of common Graſs. Some reckon the beſt way to feed Cattle with it, is to put it in Racks, becauſe of the great Quantity that they tread down with their Feet, and becauſe it ſhrinks ſo much in drying.

Feeding. Great care muſt be taken of the Cattle that are firſt put into it, leſt it burſt them. To prevent which, ſome give them Straw with it, and ſome ſtint them as to Quantity; but the beſt way is only to turn them into it the firſt Day about Noon, when the Dew is off, and in a dry Day, for about half an Hour; the next Day for an Hour; the third Day for two; and then for three or four Days put them in as ſoon as the Dew is off the Ground, and let them ſtay in till four or five a Clock in the Afternoon, and after that there will be no danger, eſpecially if 'tis not too wet Weather: If 'tis, be the longer before you let them ſtay in all Night. But ſome ſow Trefoil or Ray-graſs with their Clover, which very much prevents it doing of injury to Cattle; and as 'tis a Graſs that grows very upright, it ſhoots through the Branches of the ſpreading Clover, and makes the Crop much better.

Your Clover being preſerved dry, about the midſt of *March*, thraſh it, and cleanſe it from the Straw as much as you can, and beat the Husk again; being very well dryed in the Sun after the firſt thraſhing, get what Seed you can out of it, and after you have thraſhed it, and chafed it with a fine Rake, and dryed it well in the Sun again, if you rub it you may get out a great deal more: Some get above two Buſhels out of an Acre, a good thraſher can thraſh out but about ſix Gallons in a Day. Some ſay that the beſt way of ſowing of it is in the Huſk; but 'tis ſomething difficult to ſow that way. The Seed of Clover will grow as well at two years old, as at the firſt. If one could get an Account from *Flanders* how they thraſh their Clover there, it would be of great Advantage for the Propagation of it.

§. 2. Of St. Foin *or Holy-Hay.*

St. Foin where it will grow is eſteemed one of the beſt of theſe Sorts of Graſſes, becauſe of its long Continuance and Bulk: In many Lands it will laſt twenty or thirty Years: Beſides, it improves the Land it grows on very much; for the Plowing in of the Roots is excellent Manure for it, which is what is not uſual with theſe Sorts of Seeds. You may break up your Land, and ſow it with Corn till 'tis out of Heart, and then ſow it with St. *Foin* again. 'Tis reported to grow on any dry barren Land where hardly any thing elſe will grow; and the Roots running deep, and growing great, are not ſoon dryed up by the parching Heat of the Sun; though 'tis reckoned to thrive beſt in a ſhallow Ground, becauſe elſe in ſome Soils 'tis apt to run too deep: But I could never find it to grow upon any Soil in theſe Parts, except chalky Lands, as at *Royſton* in *Hertfordſhire*, where it grows upon the Miry chalky Clays, and upon the drieſt part of *Royſton*-Heath, which conſiſts of dry chalky Hills. In ſome parts of *Dorſetſhire*, they ſay it grows on very ſtony dry Hills where the Earth is not above half a Foot deep, its Roots running in between the Cracks of a flaky Lime-ſtone, the Earth being a light Red-loam. Which makes me conclude it to do beſt on Land, that is ſweet, Chalk and Lime-ſtone being both of a ſweetning nature to Land; but I could wiſh that ſome particular Obſervations were made of the nature of the ſeveral Lands in the ſeveral Counties where it doth grow: For 'tis certainly one of the beſt improvements of Land that can be made uſe of where it will take, eſpecially where Manure is ſcarce.

It muſt be ſown in far greater Quantities than the Clover-ſeed, becauſe 'tis a larger, lighter Seed. They commonly allow four Buſhels to an Acre. You need not fear ſowing of it too thick, becauſe it the ſooner ſtocks the Ground, and deſtroys all the other Graſs and Weeds. It may be ſown alone, or with Oats, or Barly, as the other Graſs-ſeeds are; but you muſt be ſure to make your Ground very fine for this and all other Graſs-ſeeds. Do not feed it the firſt Year, eſpecially with great Cattle, becauſe the Sweetneſs of it will provoke the Cattle to bite too near the Ground; and large Cattles treading of it is a great Injury to it, eſpecially in wet Weather; and therefore 'tis beſt Mowing of it the firſt and ſecond Year, and after that it will be out of danger.

Time. The beſt Time for ſowing of it is in Autumn from the beginning of *Auguſt* to the end of *September*, if ſowed alone; but if mixed with other Grain, in the Spring from the beginning of *February* till the end of *March*; the earlier 'tis ſown in either Seaſon, the better: And 'tis better to be ſown alone, than with other Grain.

If you reſerve it for mowing, it muſt be laid up by the latter end of *March*. The time of cutting of it is when it begins to Flower, which is about the middle of *May*, ſometimes later. This Sort of Hay is very excellent for Horſes.

It is the beſt Food for great Cattle, eſpecially in the Spring. It hath not the danger attending of it, that Clover hath. It breeds abundance of Milk, and the Butter that is made of it is very good. If you feed it with Sheep, let it be in Autumn, and in the Winter: It fattens them very ſpeedily.

§. 3. *La Lucerne.*

This is a Plant much commended for an excellent Fodder, and by ſome preferred before any other Sort, being to be managed after the ſame way with other Seeds of this Kind, and is reckoned to grow on any Sort of Land; but the Seed coming from *France*, this War-time hath prevented its being ſo much propagated as otherways it would have been; and therefore I cannot find thoſe Obſervations made about it as yet, that might be expected. They ſow twelve or fourteen Pound upon an Acre. The Time of ſowing of it is about the Middle of *April*. It may be mow'd twice a Year, and fed all the Winter. The Hay muſt be well dryed and houſed, it being otherwiſe bad to keep.

It is good for all Sort of Cattle, but beſt for Horſes, It feedeth much more than the ordinary Hay, and cauſeth abundance of Milk, and muſt at firſt be uſed with Caution, and be mixed either with other Hay or Straw; you may alſo feed the Graſs, but if you mow it, 'tis beſt to do it but once a Year. It will laſt, as I am told, twenty Years. One Acre is reckoned to keep three Horſes all the Year, if it takes well. It purges in Spring, and makes any Cattle fat in ten or twelve Days.

§. 4. *Of Ray-Graſs.*

This Sort of Graſs is reckoned to grow on any Land, but chiefly in cold, ſowre Clayey, and weeping Grounds. It endures the Summer-droughts, and the Winter-froſts, being the beſt of Winter-foods, and ſprings the earlieſt of any. The ſhorter it is fed, the better, There can be no danger of over-ſtocking of it, becauſe if left to grow too rank, the Stalk is apt to grow Hard and Sticky, 'Tis beſt for Horſes and Sheep, and very much prevents the Rotting of the Latter. Some ſow two Buſhels on an Acre; but the beſt Quantity is three Buſhels, where they ſow it with Clover, which is the beſt way of ſowing of it. Where Land is proper for it, they ſow eighth Pound of Clover, and one Buſhel of Ray-graſs upon an Acre. It will laſt upon ſome Lands ſeven or eight Years. Some mow it for Hay, and thraſh out the Seed, which commonly yields, about *London*, from two Shillings Six-pence, to three Shillings Six-pence *per* Buſhel. Some tell you of five Quarters being got off of an Acre.

If Ray-graſs-ſeed be cut ſomething Green, it makes the beſt Hay, and the Seed will grow, but not ſo well as if Ripe; but you muſt take care, if the Seed is newly thraſhed, that it do not lie Thick, becauſe it will Heat.

§. 5. *Of Hop-clover, Trefoil or three-leaved Graſs.*

This Sort of Graſs is finer and ſweeter than the great Clover, and upon ſome Land is a very great improvement, though 'tis reckoned to grow upon any Soil. Mr. *Hartlib* in his Legacy, ſays, that there are twenty three Sorts of it, and that each Sort delights in a particular Soil; as ſome of it in watery Places, ſome on dry, ſome on Clay, and ſome on Sand, which may give Occaſion to moſt to reckon that it will grow on any Land. But there are many Sorts of Land that will bear but indifferent Crops of it, which many times may be occaſioned by the not ſuiting of it to the Land 'tis ſown on. Concerning which, if ſtrict Obſervations were made, I believe it might be much improved.

It may be ſown with Corn, as Clover, and other Graſs-ſeeds are, or alone only for Graſs, or being ſprinkled in Meadows, will mend the Hay both in Quantity and Quality. They commonly allow twelve Pound to an Acre.

§. 6. *Of ſeveral other Graſſes or Hays.*

Eſparcet is a Kind of St. *Foin*, and by ſome judged to be the ſame.

La Romain, or *French* Tares, or Vetches, is a Grain that in *France* is ſown annually, and is very quick of Growth, being very good Food for Cattle, eſpecially Horſes; and after feeding of it the fore Part of the Summer, they let it grow for Hay. 'Tis not ſo good as the other Graſs-ſeeds, becauſe 'tis but of ſhort continuance: 'Tis reckon'd to grow on very Poor dry Land.

Spurry-ſeed is uſually ſown in the Low-countries twice in a Summer, the firſt time in *May*, that it may Flower in *June* and *July*, and in *Auguſt* the Seed is uſually Ripe. The ſecond time of ſowing of it is after *Rye-harveſt*, which Grounds they uſually Plow up, and ſow with this Seed, to ſerve their Kine in Winter, when other Graſs is eat up. It makes excellent Butter. Hens will greedily eat the Herb, which will, as Mr. *Hartlib* ſays, make them lay the better.

I am told that in *Buckinghamſhire* they make good improvement of their Lands by ſowing of them with *Parſly*, and that it prevents the Rot of Sheep; One in the Hundreds of *Eſſex* made a great improvement of ſome Land by ſowing of it with *Muſtard-ſeed* for the ſame uſe. But for theſe Sorts of Seeds and many other things, I ſhall refer you to the Appendix, when I have got a farther Account of this and other Particulars, which I ſhall be obliged to any that will give us any aſſiſtance in the Information of.

BOOK II.

Chap. I. *Of Arable Land and Tillage.*

A*Rable Land* is accounted a very profitable part of Husbandry if well managed, where a due Care is taken to ſuit each ſort of Soil with right Seed and proper Manure, and that the Land is proper for Corn, in the Knowledge of which lies the chief Skill of the Husband-man, as was obſerved both by *Virgil* and the Ancients:

But e'er thou break the unknown fallow, firſt
Obſerve the Winds and Heavens ſtill varying Face,
Old cuſtom with the Nature of the Place,
What every Soil will bear, and what refuſe.

In order to the attaining of which Knowledge, I ſhall firſt begin with a Deſcription of the *Plough*, as the chief Inſtrument in this Work; and ſecondly, give an Account of the way of Plowing, Sowing, and ordering of Land for Corn; and thirdly, ſhew how to order each Sort of Grain, and what Soil is proper for them; and fourthly, give an Ac-Account of the ſeveral Sorts of Soil, with their Natures and Qualities.

Chap. II. *Of the Plough.*

THere is a great difference in moſt places about the Make and Shape of their Ploughs; ſome differing in the length and ſhape of their Beams, ſome in the Share, others in the Coulter, and in the Handles, *&c.* Every place almoſt being wedded to their particular Faſhion, without any Regard to the Goodneſs, Conveniency, or Uſefulneſs of the Sort they uſe: And as ſome of them are more convenient in ſome particulars than others, and ſuit ſome Sort of Lands better than others, I ſhall endeavour to give a Deſcription of the moſt uſual Sorts of them, with an Account of the Advantage and Diſadvantage of each Sort, which I think muſt be one of the likelieſt Ways of improving this uſefull Inſtrument in order to which, I ſhall firſt give you an account of what Sort of Ploughs are reckon'd beſt for each Sort of Land; ſecondly, deſcribe ſeveral Sorts of Ploughs uſed in ſeveral places; and laſtly, give ſuch general Rules as may ſerve to direct you how to judge what Sort of Ploughs are beſt.

1. The Plough reckoned the moſt proper for ſtiff black Clays is one that is long, large, and broad, with a deep Head, and a ſquare Earth-board, ſo as to turn up a great Furrow; the Coulter long and very little bending, with a very large Wing; and the Foot long and broad, ſo as to make a deep Furrow.

2. The Plough for the White, Blue, or Gray Clay need not be ſo large as the former, only ſomewhat broader at the Breech, the Coulter to be long and bending, and the ſhare narrow with a wing

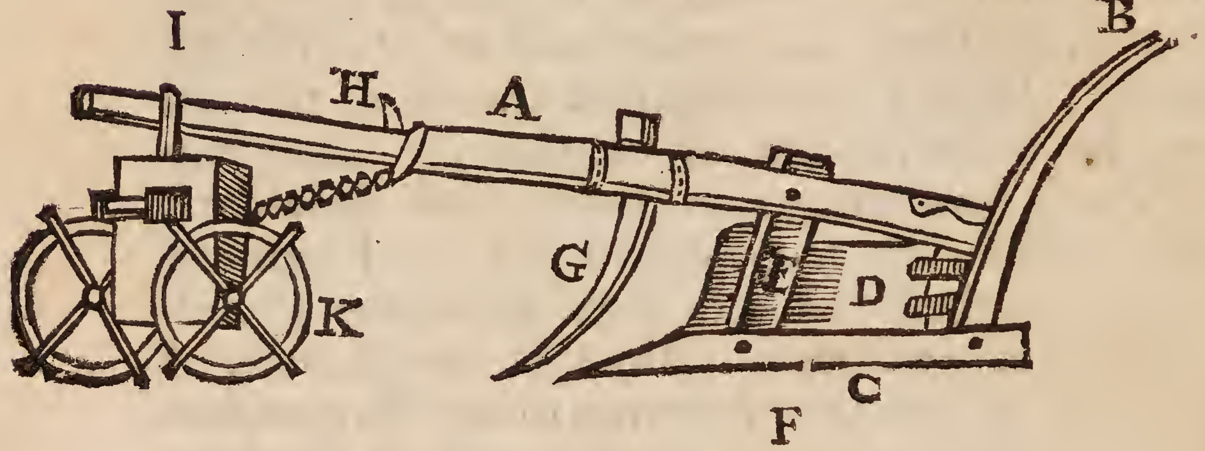
coming up to arm and defend the Earth-board from wearing.

3. The Plough for the Red, White, Sands or Gravel, or any light Moulds, may be lighter and nimbler than the former, the Coulter more circular, and thinner, and the Wing not ſo large.

As to the particular Sorts of Ploughs uſed in ſeveral Countries, it would be endleſs to give a deſcription of them all, and would be of little advantage; becauſe the different Forms uſed, proceed more from the Cuſtom of the Country, than any Uſefulneſs that belongs to them; and therefore I ſhall confine my ſelf only to the moſt common Sort, or to thoſe that have ſome particular Uſefulneſs belonging to them: Amongſt the Number of which I ſhall give the preference to the *Hertfordſhire* Wheel-Plough, as one of the beſt and ſtrongeſt for moſt Uſes, and of the eaſieſt Draught, and what ſuits beſt with all Sorts of Lands, except miry Clays in Winter, which are apt to clog the Wheels at that time of the Year; but even for thoſe Sort of Lands they are the beſt Ploughs to plough up Layes, or Summer Fallows with; becauſe they turn the Turf beſt of any of the common Sort, and plow up Mole-hills, or uneven Ground without levelling, and Fallow-land in Summer in the dryeſt Weather. The chief Fault that attends them is their Handles ſtanding ſloping on one ſide, which makes them very troubleſome to hold, and to follow; eſpecially to thoſe that are not uſed to them: But that might eaſily be remedied in the Make of them, were the Makers and Holders of them not wedded to their particular way; the Form of which Sort of Plough you have in the following Figure: And as I may often have occaſion to name ſome particular Parts of them, I thought it might be convenient to ſhew what the Names of the particular Parts of the Plough are; as A is the Plough-beam, B the Handle, Tail, Stilts, Hales or Staves, C the

Neck,

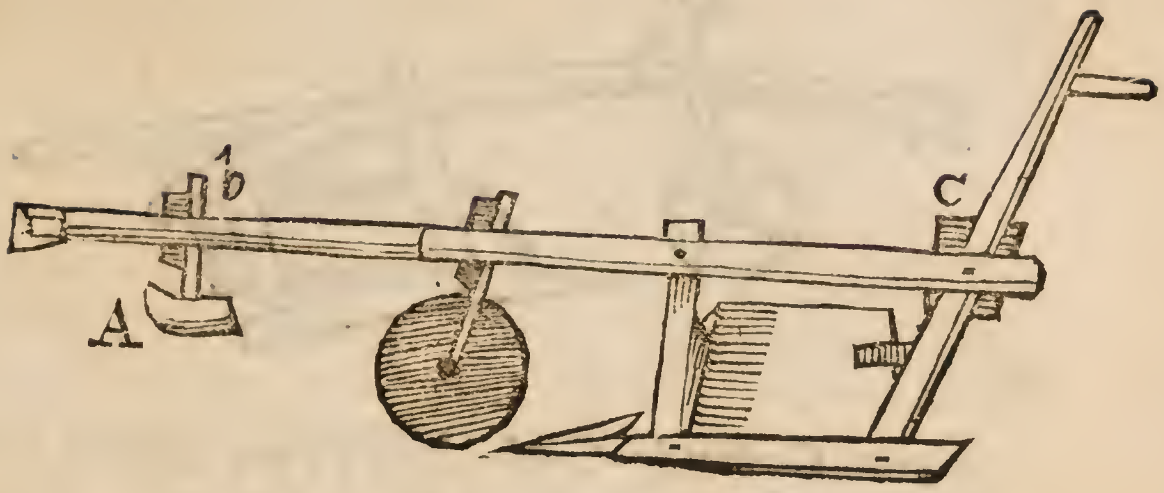
Neck, or Share-beam, D the Earth-board, Mould-board, Breſt-board, Furrow-board, Shield-board, *&c.* E the Sheath, F the Share-Iron, G the Coulter, H the Plough-pin, and Collar-links, I the plough-pillow and Boulſter, K the Wheels.



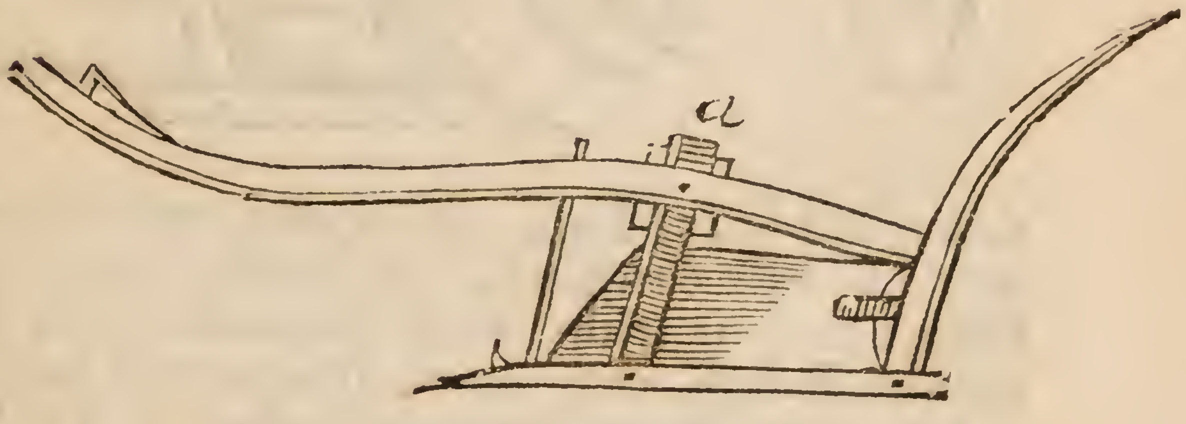
About *Colcheſter* they have a fine-light Wheel-plough, that with two Horſes they plow up two Acres in a Day of their light Lands; which Sort of Plough is very peculiar for its Earth-board being made of Iron, by which means they make it rounding; which helps to turn the Earth or Turf, much better than any other Sort of Plough that I have ſeen.

The *Lincolnſhire* Plough is very particular in its ſhape, and is a very good Plough for Marſh or Fenny-Lands ſubject to Weeds and Sedge, and that is free from Stones, becauſe of its Coulter, and the largeneſs of the Share, which they make many times above a Foot broad, and very ſharp; at A is a Foot which they ſet higher and lower with a Wedge at *b*, which keeps the Fore-part of the Plough from going deeper than they would have it: At C are Wedges that they ſet the Hinder-part with; the Coulter is a ſharp turning Wheel which cuts the Roots of the Graſs or Sedge croſs by its motion as it goes round, while the broad Share cuts the Bottom of their Roots.

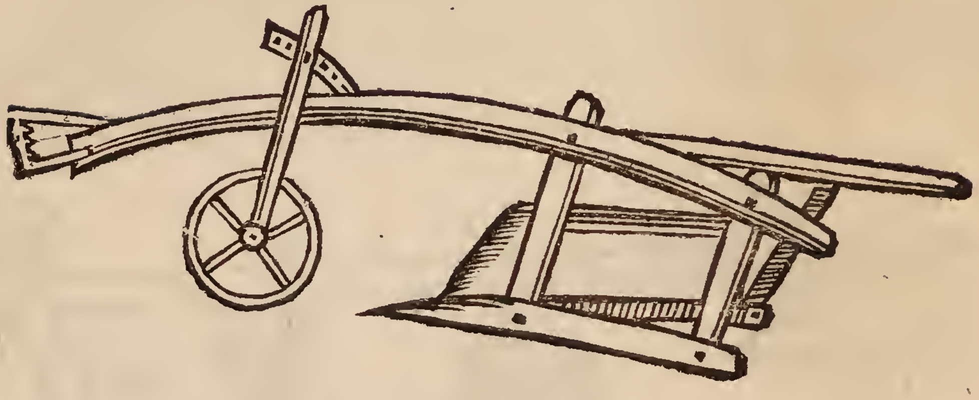
The



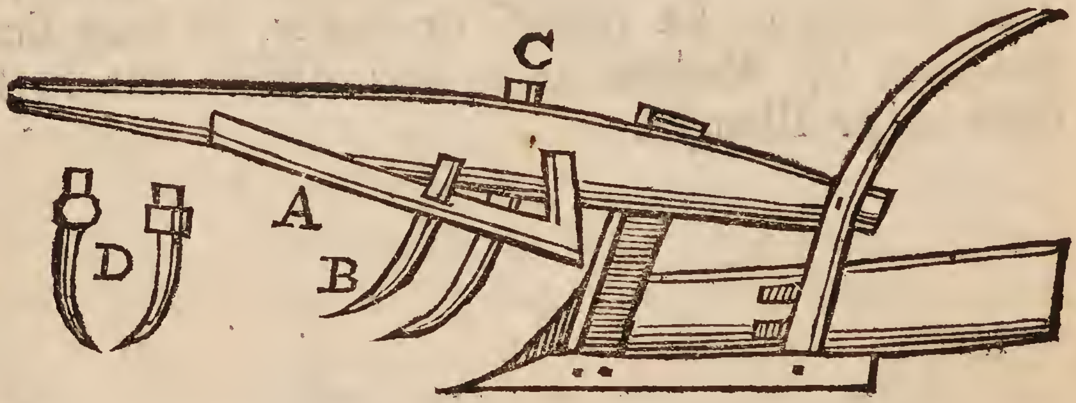
The moſt common Plough is the following called the Dray-plough, which is the beſt Plough in Winter for miry Clays, when the Land is ſoft ; but the worſt in Summer, when the Land is hard : Becauſe the Point is always flying out of the Ground. This Plough is ſet higher or lower, as they find occaſion, by Wedges at *a*, and differs but little from other Ploughs.



In *Suſſex* they uſe much the ſingle Wheel-Plough, which is a Sort of Plough I ſhould not have mentioned, but for their different Make from moſt other Ploughs, becauſe they are a very clouterly Sort; and as they are very wide in the Breech, I cannot but think the Draught of them to be very hard.



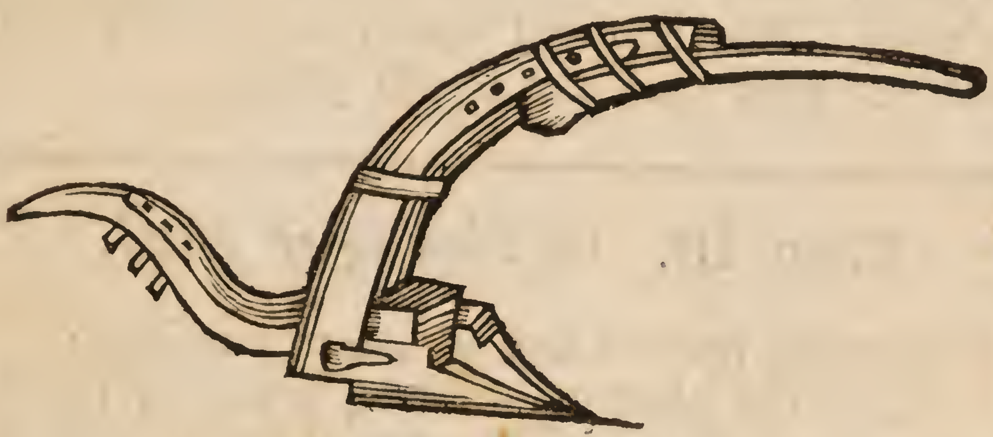
About *Caxton* in *Cambridgſhire* they have a very miry ſtiff Clay with ſmall riſing Grounds, the upper part of which they ſow with Corn ; and the lower Vallies, becauſe of the poachineſs of them, they keep for Graſs, which nevertheleſs in wet Winters are ſo ſpewy, that they know not how to feed



them ; and to cut drains with Spades, they thought would be very chargeable, and ſo they invented a Plough to do it with ; which they made much like another Plough, only much ſtronger and bigger ; and from the Beam ſtands out a piece of Wood at A, in which is a Coulter ſet at B, and another ſet in the Beam at C, which two Coulters ſtand bending inwards as at D, to cut each ſide of the Trench. The Share is very broad and flat, and cuts off the Bottom of the Trench. The Mould-board is three times the length of other Ploughs, to caſt the Turf a great way off of the Trench. This Plough cuts a

Trench a Foot wide at the Bottom, a Foot and a half broad at the Top, and a Foot deep. It was drawn with twenty Horſes, and coſt three Pounds to make, but the diſpatch it made anſwered the Charge.

The following Plough is a *Spaniſh* Plough, with one of which, and one Horſe will in *Spain* plow two or three Acres of their light Lands in a Day; becauſe of the great difference there is in the Make of it from our common Sort, I thought the inſerting of it might be of ſome uſe to help towards the Improvement of this uſeful Inſtrument.



As to the Rules to be obſerved in the ſhape of Ploughs: 1. They muſt be great or ſmall, according to the depth and ſtrength of the Soil you plow, and as the Earth is wet or dry: For which reaſon every Farmer ought to have ſeveral Sorts of Ploughs.

2. The Coulter where the Land is ſtiff muſt be the greater and the ſtronger, and go the deeper; which muſt be proportioned to the Soil, becauſe in deep Grounds the Weeds root the deeper; for the better cutting up of which, ſome place on the right-ſide of the Coulter a ſmall Wing or Finn, which cuts in two the Bottom of the Roots; and, I believe, eaſes much the Draught of the Plough.

3. A great matter to be obſerved in the making of Ploughs, is to make them go true to the pitch they are ſet, and keep to the Line you ſet them in

without ſwerving to the right or left, which depends much upon the truth of the Iron-work; and therefore the Plough ſhould rather be ſuited to the Irons, than the Irons to the Plough, the Wood-work being eaſieſt altered, if there be occaſion.

4. I cannot think a ſhort Plough or a Plough with a broad Breech can go ſo eaſie after Cattle, as a long narrow one: For the ſharper and thinner any Tool is, the eaſier it paſſeth, and the leſs ſtrength is required: And ſuch an one I believe may be made to turn a Ridge as well as a broader. But when all is ſaid that can be, though the Make of a Plough doth much help Cattle's Draughts; yet the Main of the Draught lies in the ſtifneſs of the Land you plow, and the Depth you go.

Chap. III. *Of Plowing of Land.*

IN Plowing up of Land we are to conſider:

Layes. *Firſt*, The plowing of *Layes*, which is the firſt plowing up of Graſs-ground for Corn, and is a Work commonly done in *January*. The beſt Time for the doing of which is when the Land is wet, becauſe the Turf then is tough, and will hold to turn without breaking; in the well turning of which conſiſts the chief Part of this Sort of Plowing, which, if done well, will lay the Turf ſo flat and true, that you can hardly ſee where the Plough went. This depends much upon the Make of the Plough; for the well-doing of which, if the Earth-board doth not turn the Turf well, ſome nail upon it a ſmall piece of Wood to take the upper Part of the Turf, as it riſes upon the Earth-board, which will cauſe it to fall over with the Graſs-ſide downward, your own Trial and Experience being the beſt Rule where to place it.

Secondly, The Plowing of Fallows, which is a very great benefit to Land, as appears by the common Practice of it, and in the great Care that Landlords every where take to oblige their Tenants to a ſtrict Obſervance of it once in three Years, few Lands being able to bear more than two Crops without it; and I cannot believe that any will find a Years fallowing to be a Loſs to them, let their Land be what it will; nor yet the true plowing of it, a Charge that will not pay for their Labour. The Advantage of Fallowing conſiſts in,

Firſt, Its laying of the Land in Ridges, and ſo expoſing of it to the Froſt, Wind, Sun, and Dews, all which ſweeten and mellow the Land very much; the often ſtirring of it, and breaking of the Clots, diſpoſing of it for the bearing of good Crops.

Secondly, It kills the Weeds by turning up of the Roots to the Sun and Air, and kills not only the Weeds that grow with the laſt Corn; but wild Oats, Darnel, and other Weeds, that ſow themſelves, and that as ſoon as they begin to peep out of the Ground, ſo that they have no time to ſuck out any of the Heart of the Land.

The way of ordering of Fallows is after the Crop is off, to let the Land lie all Winter, and what Graſs and Weeds grow on it, they eat off with Sheep in *April*, or beginning of *May*: As ſoon as they have done ſowing of Corn, they begin to plow up their Fallows. This firſt fallowing in moſt places ought to be very ſhallow, well turned, and clapped cloſe together; becauſe the thinner the Turf is, the eaſier it will dry through, and kill the Weeds, eſpecially if the Weather be dry: At which time one plowing is worth three other plowings. But in ſome places where there is a very cold Clay, that will not bear Corn well without being expoſed to the Heat of the Sun to warm it, they plow their firſt Plowing the depth they deſign to go. About *June* is the Time of the ſecond Plowing, which they call Twy-fallowing; at which plowing, you muſt go your full depth: This plowing is commonly performed by the Team early in a Morning, before the Dew is off the Graſs, that ſo they may have time to feed their Horſes, before they go to carrying of Hay in the Afternoon. About the latter End of *July*, or Beginning of *Auguſt*, is the time of Try-fallowing, or laſt plowing before they ſow their Rye or Wheat, (though ſome do plow up their Land oftner.) If the Land riſe full of Clots, and if 'tis a binding Land, you muſt make it fine by harrowing of it when Rain comes; but then you muſt not let it lie long before you ſtrick, ſiſe, or plow it up into ſmall Ridges, eſpecially if 'tis wet Land: And as near as you can, leave no Weeds or Turfs of Graſs unkilled or unbroke with your Harrows. Becauſe it ſours Land, and cauſes the Mould to lie hollow from the Roots of the Corn: But if your Land will diſſolve well with the Froſt, 'tis beſt to let it lie a little rougher, eſpecially if you deſign to ſow it with Barly, then the rougher it lies for a Winter-fallow the better, becauſe it lies the dryer, and the Spring-ſhowers will afford Moiſture enough to make it fine for ſowing: But if the Winter doth not diſſolve the Clods, which it will not do in binding Lands, ſuch as the red Loams are in *Eſſex*, which Lands they are often forced to wait for Rain for the fallowing of, becauſe they plow only with the Dray-plough, the Point of which is always flying out of the Ground in dry Weather, by which means they are often forced to plow their Fallows ſix or eight times, which doth but ſeldom kill the Weeds; becauſe plowing in wet Weather doth but remove them out of their places, and turn moiſt Earth upon their Roots, which makes them quickly grow again. I have often experienced that with the *Hertfordſhire* Plough, I have in *Eſſex* made a better Fallow with three plowings than my Neighbours could with ſix or ſeven. Sometimes where Land is clotty, and a Shower of Rain comes that ſoaks through them, you may make uſe of a Roll to break them. In *Oxfordſhire* they make their Rolls Octangular, the Edges whereof they reckon break the Clots better than the round ones; and in the Hundreds of *Eſſex*, where they have a very churliſh blue Clay, they uſe large round Rollers which are ſtuck with ſtrong Oaken-pins about three Inches long, and four Inches diſtant one from another in the Rows, and each Row twelve Inches aſunder. But,

In *Hertfordſhire* they always, if they can, plow in dry Weather, and harrow in wet, which makes the beſt Fallows; and always in fallowing of Land they plow one plowing croſs the way, that they intend to lay the Ridges when they ſow them.

In *Kent*, I am told, they have ſome Land ſo rich that it will yield good Crops of Corn for twenty Years together without fallowing, and that moſt of the Land that they fallow, they plow but once before ſowing; nay, often, a Crop of Peaſe ſerves inſtead of it. In *Suſſex* they plow their Fallows but 'twice; but I am ſatisfied that a well ordered Fallow would be of much more advantage to them: For if the Land do not need fallowing to enrich it, it will for to ſweeten it, and to kill the Weeds, which fallowing gives the beſt check to.

Where Land is but indifferent, and Manure is not to be got, fallowing every other year is found a great Improvement, and is a very ancient piece of Husbandry, as may be ſeen in *Pindar*, *Xenophon*, and *Virgil*, who adviſes to

Let thy Land reſt alternately untill d,
And to worn Grounds an annual ceſſation yield.

Virgil. Georg.

In ſome places they take a Crop of Wheat and a Crop of Peaſe, and ſo fallow their Land again.

In *Staffordſhire* they often give their Lands a Winter fallowing, beſides the three ſummer fallowings, and lay their Land up in Ridges, when they ſow

Barly, which ſeems the way of the Ancients, by *Virgil*,

The greedy villager likes beſt that Mould,
Which twice hath felt the Sun, and twice the Cold.

Pliny likewiſe commends much the Plowing of Land four times, but you muſt obſerve in Winter to harrow no more down than what you can quickly reer up again upon an Edge; becauſe if much Rain come upon it while it lies flat, it will make it ſo poachy that you cannot Plow it, (eſpecially if 'tis a wet Clay Land,) and cauſe it to breed Weeds; and therefore the beſt way in ſuch a Caſe is to plow up in a Morning; and harrow down in the Afternoon what you deſign to plow or ſtrick the next day: Or you may harrow it in the Morning juſt before you Plow it. And if Land be weedy, by reaſon of the wetneſs of the laſt Summer, plow it up as ſoon as you can in Winter, to kill the Weeds, and to mellow it; ſome upon Lands that they deſign for a Fallow the next year with the laſt Crop of Corn, ſprinkle four or five Pound of Clover upon an Acre, which ſerves them to feed at *Michaelmas*, and the next Spring till about *Midſummer*; at which time they begin their firſt fallowing, and in *Auguſt* they plow it up into ſmall Ridges, and ſo let it lie for a Winter Fallow, ordering of it for Barly the next Spring after.

Chap. IV. *Of the laying of Land in Ridges, and the ſowing of it.*

SOme in plowing up their Lands, lay four Ridges together: In the Hundreds of *Eſſex* they lay ſix or eight Ridges together: in *Huntingtonſhire*, and many other places where are very ſtiff moiſt Clays, they ſow all upon broad Lands, raiſing the middle of the Ridges in ſome places near a Yard higher than the ſide Furrows, which certainly muſt drain thoſe poachy Clays the beſt of any way; for the chief deſign of laying Land in Ridges is the draining of it, and the making of the Corn to grow dry. But this way of laying of Land can only be done in a deep Soil, where the deſcent of the Ground doth not require the Ridges for the draining of the Land to be laid otherways; they chuſe to have the Ridges to run *Eaſt* and *Weſt*, becauſe the Sun comes between them the better.

Be ſure what furrows you leave to lay them open and clean ſcoured, ſo as to carry away all the ſtanding Water and Moiſture; and at all the loweſt places make drains that may lead well into one another. Where the Plough will not make them deep enough, let it be done with the Spade: For in the well draining of Corn-lands, lies a main advantage: And obſerve in making of your drains both for Corn-land and Paſture, not to lay the Earth you dig out of them in Heaps or otherways near to them; but either let it be carried out at a diſtance from them by the Spade, or in Carts or Wheel-barrows, if 'tis Graſs or fallow: And by this means you will conſtantly be lowering of your Land next the drains, which otherways will be treading in again, and always ſtopping of them.

If 'tis dry Weather in the Spring, that your Land ſhould riſe full of Lumps, the lying in the Air, if 'tis a binding Land, will ſometimes cauſe them to grow ſo hard that you cannot break them, as I ſaid before, without a great deal of Rain to moiſten them, which may be inconvenient for you to ſtay for; in ſuch Caſe, harrow it as you plow it up, but then, except it be very dry Land, you muſt ſpeedily plow it up an Edge again.

Some ſow their Lands under Furrow, as they call it; that is, they ſow the Corn in the Furrow, and then plow a Ridge upon it to cover it; and ſome harrow their Ground over, and ſow Wheat or Rye on it, with a broad Caſt: Some only with a ſingle Caſt, and ſome with a Double, and then plow it upon an Edge in broad Lands where the Land is dry; and ſome plow their Land up an Edge for broad Furrows, and ſow their Wheat or Rye on it, and then harrow it over: Either of theſe ways, but eſpecially the latter, I believe to be better than the common way of ſowing of Wheat and Rye under Furrow in binding Lands, and in ſhallow or very wet Soils, becauſe it doth not bury the Corn ſo deep as the other way; for your Furrows ſhould be deep or ſhallow, according to the depth of the Soil.

In cold Lands ſow Wheat or Rye earlier, and in hot Lands later; but for Summer Corn, plow your poor Land firſt; but ſow your cold Land laſt. Some mention very great Crops that have been gotten by ſowing of Wheat in *July*; but they neither mention the Place, nor the Nature of the Soil it was ſown upon; which are the principal things to be minded in all experiments of this kind; if they can be had.

In *Hertfordſhire* they ſow all their Barly with a broad Caſt upon broad Ridges, and in *Eſſex* on ſmall Ridges like Wheat, where they have two ſmall harrows that clap on each ſide of the Ridge, and ſo they harrow it right up and down, and roll it with a belly Roll that goes between the Ridges, when they have ſown it: But I think the large ſquare Harrow the beſt; and if every Farmer had two or three Sorts, one a Degree finer than the other, I believe it might be a great help to them: For the well covering of the Seed muſt be of great Advantage.

Chap. V. *Of Sowing of Corn.*

GET your Seed from a worſe Soil than your own if you can; if not, 'tis better to have it from good Land, than not to have Change: For all Seed doth degenerate if long ſown upon any Land, but moſt upon bad Land. This the Ancients were ſenſible of, as appears by *Virgil*,

Your changed Seed delights the pregnant Plains,
And Ground left fallow grants no little Gains.

In the *South part* of *Staffordſhire* they go to the *North* for Seed-corn; and they of the *North* to the *South*, except in the Moor-lands, where they always chooſe to get the biggeſt Seed they can, becauſe their Corn is apt to come to nothing, if not renewed from other Parts. But the having of Seed from the *Northern* Countries to the *South* is much the greateſt Improvement, and the farther *Northward* the better, and the more will be the Advantage. The ſmalleſt Seed is reckoned the beſt, of Wheat, Rye, or Barly, if it be clean from Soil: But I believe they judge it ſo rather upon the account of the number of Grains that go to fill the Buſhel, than upon the Account of the produce. Variety of Seed is likewiſe an Advantage to Land, becauſe every Sort of Grain draws and attracts from the Earth only its proper juice ſuitable to the Nouriſhment of its own Body: So that the ſowing of the ſame Grain often exhauſts, and weakens the Ground by ſtill attracting of the ſame Sort of juice, one Crop after another.

In ſowing of Land great regard ought to be had to the Weather and the Temper of the Land you deſign to ſow, with the Sort of Seed you intend to uſe. Dry Land may be ſowed in wetter Weather than Moiſt; eſpecially if the Seed be what will bear Wet, or that the dry time happens againſt Winter, when you may be ſure of Rain coming; as if you deſign to ſow Rye or Wheat, the firſt of which Seeds cannot be ſowed too dry, nor the other too wet, except 'tis ſo miry that the Plough cannot go, for which reaſon the Rye ſhould be ſown in dry Land and in dry Weather, and the

Wheat in moiſt: and therefore it was that in *September* 1699, which was a very dry time, the Rye that was ſown then did very well, and came up preſently without Rain: But ſeveral ſowing of Wheat at that time, becauſe 'twas the the uſual time of doing of it, it lay in the Ground till Rain came, which was the latter end of *October* firſt, and then but part of it came up neither, becauſe it was muſtied and ſpoiled with lying ſo long in the Ground; and what did come up was chiefly upon the ſides of the Ridges, for the Ground was ſo dry that the Rain could not ſoak through the Top; and therefore only reached to the Roots of the Corn on the ſides that were but ſlightly covered: For which reaſon they having the whole Winter before them, I think that they had much better have ſtaid longer for to ſow their Wheat till they had had ſome Rain firſt: But all Summer-corn doth beſt in a dry time, except black Oats, which require more moiſture, as I ſhall ſhew more at large hereafter.

Chap. VI. *Of Steeping of Corn.*

WHeat they commonly ſteep in Brine twelve Hours; and drawing the Brine from it, they mix it with unſlacked Lime beat to Powder, and ſo ſow it when dry, which is reckoned of great Advantage, and to prevent the Smuttineſs of it. Some others propoſe to drain Dunghills, or to diſſolve Sheeps Dung in Water, and to add to it as much Salt as will make it a ſtrong Brine, in this Liquor to ſteep your Corn: Wheat eighteen Hours, Barly thirty ſix Hours, and Peaſe twelve, and to dry it with unſlacked Lime powdered; and that if you put Wormwood into the Brine you ſoak your Corn in, it will prevent the Birds eating of it: But as my deſign is chiefly to promote tryed Experiments, ſo I ſhall not inſiſt upon theſe things, but rather truſt to what real Experiments I can get an Account of from ſuch as are willing for a publick good to communicate them.

BOOK III.

Chap. I. *Of ſeveral ſorts of Soils, their Natures, Product, and Management.*

ALL Sorts of Land may be reduced to Sandy, Gravelly, Chalkey, Stony, Rocky, Hazely, Black-earth, Marſh or Boggy, and Clay-land, of which laſt ſome are Black, Blue, Yellow, and Red.

In many places ſeveral of theſe Soils are mixed together; where they are, they are much better, than when alone, eſpecially where the Hot and the Dry is mixed with the Cold and the Moiſt: For which reaſon any Clay laid upon Sand or Gravel, or Sand upon Clay is the beſt Manure, becauſe it alters and changes the Nature of the Land it ſelf; whereas Dung and ſuch things improve them but for a time. And 'tis not only the natural Soil that we are to conſider, but the depth of it and alſo what Soil is underneath it: For the beſt and richeſt Soil, if but half a Foot or a Foot deep, if it lie upon a ſtiff Clay or hard cold Stone, is not ſo Fertile as a leaner Soil of greater Depth, or lying upon a warm Limeſtone, Sand or Gravel, through which the ſuperfluous Moiſture may deſcend, and not ſtand upon the Clay or Stone to chill the Roots of the Graſs or Corn: And likewiſe the Climate is to be conſidered, for even in *England*, cold moiſt Clays are much more fruitful in the *South*, than in the *North*, with the Quantities of the Mixture of each Soil, and what it moſt abounds with: And likewiſe the natural produce of the Land, as to Weeds and

Graſs; and when Plowed what Corn agrees beſt with it, and what effect Plowing hath upon it: Concerning all which Particulars I have not had Opportunity of making ſo many Obſervations as I ſhould have done; but what I am wanting in at preſent, I hope by farther Endeavours, and the Aſſiſtance of thoſe that are willing to promote good Haſbandry, to inlarge upon. But before I enter into a particular Deſcription of the ſeveral Sorts of Land, I ſhall firſt lay down ſome general Rules for the knowing of Fruitful and unfruitful Soils, and ſecondly give ſome general Rules for the ordering of Land for Corn.

All Land that moulders to Duſt with a Froſt, with all Sorts of warm Lands, Black Mould, Yellow Clays, if not too Spewy and Wet, and that turns Black after Rain, are good for Corn: For as old *Tuſſer* well obſerves,

The Soil and the Seed, with the Sheaf and the Purſe,
The lighter in ſubſtance, for profit the Worſe.

And Land that produces large Trees, Black-Thorn, large Weeds, Thiſtles, rank Graſs, *&c.* and that lies in Bottoms open to the *Eaſt* or *South*, being well ſheltered from other Winds, is a Sign of fruitful Lands. Thyme, Strawberries, Bettony, *&c.* direct to Wood, and Chamomil to a Mould diſpoſed to Corn.

All Land that binds after Froſt and Rain, that turns White, and is full of Worms, that is extreamly Moiſt or Cold, or too Hot or Dry, that lies on the *North* ſides of Hills, expoſed to cold Winds and Froſt in Winter, and ſcorching Heat in Summer, that bears Holly, Yew, Box, Junipers, Ivy, Brakes, Furz, Broom, Heath, Ling, *&c.* and Lands that bear Moſs, Ruſhes, Yarrow, Wild-tanſie, Flags, *&c.* are a Sign of Cold Land; and Plants appearing Withered or Blaſted, Shrubby and Curled, are the Effects of immoderate Wet or Heat, and cold interchangeably. Black, Dun, or Yellow Sand, and very hot ſtony Gravel are generally very unfruitful.

Chap. II. *The general Rules for the ordering of Corn-Lands.*

AT the firſt Plowing up of Layes, they commonly ſow the firſt Crop with White or Black Oats, according as the Land is Dry or Moiſt; the next Summer they Fallow it; and as the Nature of the Land is, ſow it with Rye, Wheat, or Barly; and the next Crop, which they call the Etch Crop, with Oats, Beans, Peaſe, *&c.*

But where Land is Rank 'tis not good to ſow Wheat after a Fallow; but Cole-ſeed or Barly, or both, and then Wheat: and where you find dunging of Land makes it too Rank, lay your Dung upon the Etch, and ſow it with Barly. Which generally doth better in Rich Land than other Corn; and after that, Fallow it, and ſow it with Wheat.

Some after a Fallow ſow their Land with Wheat; the next Year they Fallow it again, and ſow it with Barly; the next Year with Peaſe, and then Fallow it again, and ſow it with Wheat. This is a good way where Land is not in Heart, and Dung and Manure ſcarce, eſpecially in the Hazely red Brick-earths in *Eſſex*, that are made more fixed and ſolid by plowing.

In *Suſſex*, where they have very ſtiff Clays, after a Fallow they ſow two Crops, and lay down their Lands with Clover and Ray-graſs for three Year; and then lay on twenty Loads of Dung upon an Acre; or elſe they Lime or Chalk it while it is Graſs: This is a very great Improvement of ſtiff Clays, in that it fits them for Corn and Graſs too; natural Graſs being what they will hardly bear, if plowed up, unleſs they lie a great many Years, and are well Dunged.

Chap. III. *Of the natural Produce, and way of ordering of ſeveral particular Sorts of Land in ſeveral Countries.*

CLay-lands are either Black, Blue, Yellow or White; of which the Black and the Yellow are the beſt for Corn, and the White and Blue the worſt; ſome of which is of ſuch an obſtinate ill natured Temper, that nothing will ſubdue it; and ſo greedy and voracious, that nothing will ſatiate it, without very great Induſtry. It turns every thing that is laid upon it to its own ſubſtance; and tho' ſome Clays are more pinguid, and others more ſlippery, yet all of them are very tenacious of Water on the Surface, where it ſtagnates and chills the Plant without penetrating; and in dry Seaſons is coſtive, hardning with the Sun and Wind, 'till they are unlocked by induſtry, and rendred more kind, ſo as to admit of the Air and heavenly Influences. The chief Produce of theſe Lands for Corn, are Wheat, Barly, Gray-peaſe, Beans, *&c.* The natural Produce as to Weeds is Gooſe-graſs, or Wild-tanſie, large Daiſes, Thiſtles, Docks, May-weed, Poppies, *&c.* Some of theſe Clays will bear good Clover and Ray-graſs, if well dunged. The beſt Manure for them is Dung, eſpecially Horſe-dung, Aſhes, Chalk, Lime, Soot, (eſpecially if they are moſſy) ſome Sorts of Marle, Folding of Sheep, Pigeons-dung, Malt-duſt, *&c.* Clays hold Manure the beſt of any Lands, and yield the beſt Grain, eſpecially where there is a Mixture of Lime-ſtone with it. They commonly ſow theſe Lands at firſt breaking up with black Oats: Fallow them as before deſcribed, and then ſow them with either Wheat or Barly, and the Etch Crop with either Oats, Peaſe, or Beans, *&c.*

Chalky Lands. Their beſt Produce of Corn, is Barly and Weat; Oats will do well on them. Their natural Produce for Weeds is Tine, Poppies, May-weed, *&c.* For Graſs ſeed, *St. Foin*, *Trefoil*, and, if rich, *Clover.* The beſt Manure for theſe Lands is Rags, Dung, Folding of Sheep, *&c.* Theſe Lands, if Rain happen to fall on them juſt after ſowing, before the Corn gets up, will cauſe the Earth to bind ſo hard that the Corn cannot get through it.

In *Hertfordſhire* they order theſe Lands for Corn the ſame with the Clays abovementioned. In *Oxfordſhire* they commonly manure theſe Lands with half rotten Dung, which they ſay prevents the binding of it, and ſome mix it with Sand which cauſes it to work ſhort, eſpecially if any thing dry; they commonly ſow them there with Wheat, Miſlen and Barly; only after Wheat, they ſow Peaſe or Vetches: In the ſowing of which they are forced particularly to take care to have fair Weather, becauſe of the Lands binding; but if they have but two Nights dry Weather, they will do well enough.

Sand and *Gravel*-Grounds eaſily admit of Heat and Moiſture; for which they are not much the better, becauſe they let it paſs too ſoon, and ſo contract no Ligature; or retain it too long, eſpecially where the bottom is of Clay; by which means, it either parches or chills too much, producing nothing but Moſs or cancerous Infirmities: But if, as ſometimes it happens, that Sand have a Surface of a more genial better Mould than ordinary, and a bottom of Gravel or looſe Stone, though it do not hold the Water, it may produce a forward ſweet Graſs, and though 'tis ſubject to burn; it quickly recovers it ſelf with the leaſt Rain.

Of pure ſheer Sand. There is White, Black, Bluiſh, Red, Yellow, Harſher and Milder, and ſome that is but meer Duſt, that is very light; and the Gray, Black, and Aſh-colour'd that is often found in heathy Commons, which is the moſt inſipid of any. Gravels are much of the ſame Nature and Kind; only the moſt ſtony, or they that are mixed with harſh Sand, are the hotteſt and the moſt barren.

The beſt Produce of theſe Lands in Corn is Rye, white Oats, Brank-turneps, *&c.* The natural Produce in Weeds is Quitch-graſs, Sorrel, Broom, Furz, Brakes, Ling, Heath, *&c.* Their beſt Manure is Marle, or any Sort of Clay that will diſſolve with the Froſt, Cow-dung, Chalk, Mud, and half rotten Straw from the Dung-hill, to prevent their binding. Theſe Lands are commonly ordered for Corn as the Clays; but where any of them are over-run with Broom, Furz, *&c.* in *Staffordſhire* they commonly marle them, which kills all that Sort of Trumpery; only the firſt ſowing is with Buckwheat, for which they make three Fallowings in Winter, and ſtir them in *May* following; at which time they ſow them, allowing one Buſhel to an Acre, which generally yields there ſixty again: And ſo by once plowing up of theſe Lands, after the Crop is off, 'tis fit for to ſow Rye on.

In *Oxfordſhire* they ſeldom give theſe Lands above two Fallowings for Wheat, except they are much run-over with Weeds; of which Sort of Grain they reckon the White and Lammas Wheat the moſt agreeable; and after a Fallow, Rath-ripe, Barly, they generally fallow them every other Year, and reckon them unfit for Beans, or Peaſe, though they ſometimes ſow them with Winter Vetches; if with Peaſe, they account the Rath-ripe Pea the beſt. Theſe Lands muſt be conſtantly fallowed.

In *Hertfordſhire* they make a very great Improvement of ſandy Lands that are much given to Moſs, by burning of the Moſs, and mixing of the Aſhes with Lime. and plowing of them up. They ſow them with Rye which yields a mighty Increaſe, and brings a very good Sort of Graſs upon them, when laid down after a Crop or two.

Stony Lands are either ſuch Lands as are full of Flints and large Pebbles, or Lands that have a Mixture of Free-ſtone, Marble or Lime-ſtones; the Produce of which is much according to the Nature of the Earth they are mixed with: Where the Stones are of a cold Nature, 'tis good to pick them out; but in light dry Soils, they are to be left.

In *Oxfordſhire*, where they have a lean Earth and a ſmall rubble Stone, or a ſowre Sort of Land mixed with it, they manage it according to its being full of Graſs and Weeds, or its being clean. If they are weedy, they fallow them late; but not ſo late as ſowre Grounds: If they be ſcary, as they call it, that is, if they have no ſward upon them, either they fold them in Winter, and add to the Sheeps-dung ſome Hay-ſeed to make it Graſs; or elſe they lay old Thatch or Straw, and Dung upon it: For they reckon if theſe Sorts of Lands have no ſward on them before they are fallowed, they will by no means bear a Crop, but a great deal of May-weed, *&c.* In *September*, *November*, and *December*, they fallow as the Sward directs them: If 'tis done in either of the two laſt Months 'tis called a Winter fallowing, which they never ſtir again 'till they plow it up and ſow it with Barly; and theſe Lands are reckoned to do better than if finely tilled: They will bear Wheat and Meſlin in a kindly Year, and good Barly if kept in heart. They fallow theſe Lands every other Year, except they ſow Peaſe on them. Sometimes they are ſown with Dills or Lentils: When they are quite worn out, they lay them down with Ray-graſs and Trefoil: But the common ſtony Lands they order much as the Clays.

Red Hazely Brick Earth, that they have in many places in *Eſſex* (which is more properly I think a kind of Loam) being like red Clay, only it differs from Clay in its binding Quality, and in that it lets whatever Rain falls on it to ſink through immediately, and in that it hath no Stones in it: Whereas as all Clays hold the Water that falls on them 'till the Sun and Air dries it up, and after Rain with a Froſt moulders to duſt, and have Stones mixed with them; theſe Loams are an excellent Mixture with other Sorts of Earth, being an excellent Mean between other Extreams, uniting what is too looſe, cooling what is too hot, and gently entertaining the Moiſture. The beſt Produce of theſe Lands in Corn is Rye if well dunged, Barly, white Oats, Buck-wheat, Turneps, Wheat and Peaſe, if well chalked, marled, or mixed with Clay. Its natural Produce of Weeds is Broom, Fern, Quitch, ſowre Graſs, and almoſt all Sorts of pernicious Weeds. Of Graſs-ſeeds, Clover, if well dunged, and Ray-graſs; but the Clover quickly wears out of it. The beſt Manure for theſe Lands is Chalk, and Sea-coal-aſhes. Marle makes a mighty Improvement of them, and a ſtiff yellow Clay that moulders with the Froſt, that in many places lies under it, being full of ſmall Chalk-ſtones, Lime, Horſe-dung. Burning of this Land and mixing of the Aſhes with Chalk, I believe would be a very great Improvement of it. What amendment you beſtow on this Sort of Land, with Dung, or other Sort of Manure, that doth not change the Nature and Quality of it, laſts but a little while.

Theſe Lands bind very much after Rain, and turn very white; no Froſt will diſſolve the Clod; and if they are new plowed up, and never ſo much Rain comes on them, you may walk or ride on them as firm almoſt as on a Gravel: Theſe Lands are very ſubject to Worms, which deſtroy both the Corn and the Graſs very much, eſpecially the Winter-corn, if they are not often plowed. They run much to Graſs and Weeds, and the Corn very much to Straw, and yields but little Corn in wet Years; They graze well the next Year after plowing, nothing being a greater Improvement of them than plowing; becauſe it makes them ſolid, and ſweetens them ſo that inſtead of a ſowre rank Graſs, it makes them bear a ſweet Hony-ſuckle. Theſe Lands, are ordered for Corn as the Clays; only as they are rank Lands, and run much to Straw; ſo 'tis beſt to dung them upon the Etch Crop, and to ſow them with Barly, and never to dung the Fallows. But where you have not a mind to plow theſe Lands up, and find the Graſs on them ſowre and full of Weeds mow them one Year, and keep them ſhort fed with Sheep, which improves and ſweetens them very much.

In *Oxfordſhire* they have a Sort of a red Land which they begin fallowing as ſoon in the Year as they can, before the Sun is too high: If 'tis moiſt when fallowed, ſo 'tis not too wet, they eſteem it the better: They ſeldom give it a ſecond ſtirring, and reckon that if 'tis too fine and light, that it occaſions its running to May-weed, and other Trumpery; a Mixture of Cow-dung and Horſe-dung and Folding of Sheep, they reckon the beſt Manure for it; they ſow Wheat, Meſlin, Barly and Peaſe, on it, and fallow it every other Year.

Heathy Land. In *Kent* they cut up the Heath in *May*, and when 'tis dry, burn it and ſpread the Aſhes, and then plow up the Turf with a broad finned Plough, which they burn likewiſe, and mixing of the Aſhes with Lime and Sea-ſand where to be got, they ſpread it, and upon all lay a good Quantity of Dung. About the latter End of *September* they ſow it with Wheat for three Years, the fourth Year with Barly, being folded with Sheep: The fifth, ſixth and ſeventh with Oats, and the eighth with Peaſe; and after that it will bear very good Graſs.

In *Staffordſhire* they ſtock up the Heath in Summer, and burn it, mixing the Aſhes with Lime, allowing four Load to an Acre, each Load containing four Quarters, which they plow under Furrow about the Middle or the latter End of *September*,

ber, or beginning of *October*. They ſow it with Rye, allowing two Buſhels to an Acre, the Increaſe of which is commonly twenty five Buſhels. After Rye they ſow Barly, in order to which they make three Fallowings, one in *October*, one about *Candlemas*, and another in *April*, which yields much the ſame Quantity as of Rye. Next to Barly they ſow white Peaſe, for which they plow but once in *March*, allowing three Buſhels to an Acre: After which they ſow Oats, either white or red, if the Land is in heart; if not, black, for either of which they allow but one plowing in *March*, and then they lay it down for Graſs.

Gouty, mooriſh, peaty, cold, black, Land. This Sort of Land in *Staffordſhire* they order much the ſame way with the heathy Land, only they burn it deeper; but it bears little but Oats; white Oats upon the gouty, and black Oats upon the black cold Lands: The Turf of theſe Lands burnt and carried upon Rye or Barly-lands they reckon a better Improvement than Dung.

Black Mould that is ſomewhat Fat, yet porous, light, and ſufficiently tenacious, without any Mixture of Gravel, or Sand, riſing in groſs Clods at the firſt breaking up of the Plough, and ſheldring with the Froſt, is good Land, both for Corn and Graſs: Which opinion the Ancients had of them, as appears, by *Virgil*, who ſays that

Black Grounds which under heavy Ploughs are rich,
A brittle Soil (for Tillage makes it ſuch)
Is beſt for Corn, upon no Ground appears
More Wains returning home with weary Steers.

But as theſe Sorts of Lands are moſtly in bottoms; ſo the Wetneſs of them often ſpoils them for Corn: But where they are dry, they are extraordinary fruitful, eſpecially for Barly; they will bear alſo good Wheat upon the Etch Crop: But if they are very rich, that you fear lodging of the Corn, you may, if a deep Mould, plant them with Liquoriſh or ſow them with Hemp, Oad, Cole, Rape-ſeed, or Madder, or ſome other rich Commodity, that beſt agrees with rich Land; and afterwards with Corn, when ſome of the Fertility is abated. The natural Produce of theſe Lands is commonly Thiſtles, Docks, and all Sorts of rank Weeds, and Graſs. It will bear excellent Clover. The beſt Manure is Chalk, Lime, Dung, *&c.*

Where Lands are ſowre, the beſt Way to ſweeten them is to chalk them well where 'tis to be had, while they are Graſs: letting of them lie for one Year or more, and then plowing of them up, give them a good Fallowing, eſpecially in a dry Time in Summer, which will kill the Quitch, Sorrel, Moſs, and other Trumpery, that theſe Lands are ſubject to, and mellow them the beſt of any thing; alſo Soot, Aſhes, Dung, and Marle, will ſweeten ſome Sort of Lands.

In *Oxfordſhire*, I am informed, they give their ſowre Land a tilt, according to the State and Condition of their Lands; if it have a great deal of Graſs, they fallow it when the Sun is pretty high, which they call a ſcalding Fallow, which kills the Graſs roots, and makes the Land fine; if 'tis light and have but little Graſs on it, they plow it early in the Year, and then there will come ſome ſpinny Graſs that will keep it from Scalding in Summer; for if they ſuffer it to ſcorch when light, they reckon that all they can do will not procure a Crop. But, as I know not the Nature of this Land, ſo, I can give no reaſon for their Management of it. They likewiſe reckon folding of Sheep very good upon theſe Lands; and if they lay Dung upon them, 'tis commonly before ſtirring. But Pigeons Dung and Malt-duſt they reckon the beſt, becauſe they are cold Lands which they both Plow and Sow in with the Corn, to keep the Roots of the Corn warm; only they obſerve not to Plow or Sow it in very wet Weather.

Thus I have given an Account of ſeveral Sorts of Land, and of ſeveral ways of managing of them, in hopes that others will help me with what they can pick up of this Nature, which I deſign to add by way of Appendix, as I promiſed in the Beginning, which I cannot but think will be of very great uſe to the Improvement of Husbandry; becauſe by this means every one will ſee the diſtinct methods uſed in ſeveral places, and the Reaſons of their ſo doing: But then I muſt deſire all to be very particular in deſcribing of the Land they ſend an Account of; and if they pleaſe to ſend their Names, that we may know how, if there be Occaſion, to ſend ſuch Queſtions to them as may be needful for the making of a true Judgment of Things, it will ſtill add to the Advantage that may be made of this Method.

I ſhall conclude this point with giving an Account of an Experiment of Mr. *Houghton*'s, to know what Quantity of Sand any Earth or Marle is mixed with, which may be of uſe to try the Nature of ſeveral Sorts of Land by. He took a Piece of Clay, ſuch as the Brewers ſtop their Caſks with, which is commonly a Sort of Yellow Tyle-clay, which weighed four Ounces and a half Averdupois, this he diſſolved in Water, and poured off the thick into another Baſon, till all was gone but the Sand; which ſtuck not together, but lay looſe in the Water, and when it was dry would run like Hour-glaſs-ſand, of which he had about the Quantity of an Ounce, being of a yellow Colour, and ſomething gliſtning, and ſome little Stones and other foul matter was with it; and when the Clay was ſettled, he poured off the Water, and left the reſt to dry in a Pewter-Baſon, which hung together, only 'twas full of Cracks.

He tryed likewiſe Fullers-earth, which left a thick Settlement, and when dry would eaſily break to Powder; but he could find no Sand in it, neither

ther by the Microſcope, nor any grittineſs by rubbing of it between his Fingers.

BOOK IV.

Chap. I. *Of Manuring, Dunging, and Soiling of Land.*

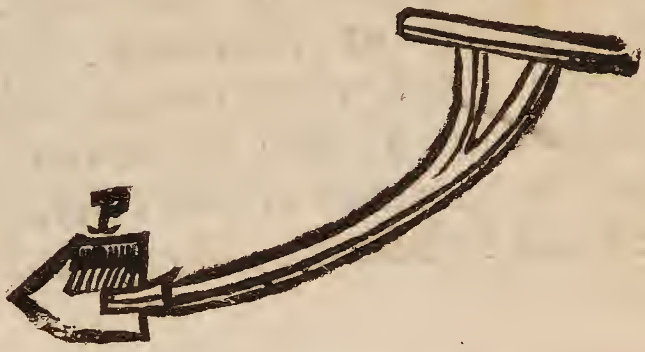
HAving given you an Account of the way of ordering of Meadows, Paſtures and Arable Land, with ſeveral Sorts of Improvement of them; I ſhall in the next place proceed to give an Account of the ſeveral ways uſed to improve Land by Manure, Dung, and other Sort of Soils.

Chap. II. *Of Burning of Land.*

B*Urning of Land* is not only a very great, but a very ancient way of Improvement, the heat of the fire warming of the Land waſts the acid, ſteril Juices, that hinder the Fertility of it, and leaves a Salt upon the Ground, in which (being mixed with the Aſhes) the fruitfulneſs conſiſts.

Burning of Land or burn-beating, commonly called *Denſhiring*, (that is, *Devonſhiring* or *Denbighſhiring*, becauſe moſt uſed or firſt invented there,) is not proper for any rich Soils; or dry ſtony Lands, or Chalky Clays; nor is it a thing too often to be repeated on any Soil, eſpecially where the Soil is ſhallow; nor muſt Corn be ſown too long on ſuch Lands: For burning waſts the fertil Juices of the Land, as well as it abates the bad: And therefore is moſt proper for thoſe Lands that have lain long untilled, and have contracted a ſowre Juice which cauſes the Land to run to unprofitable Trumpery; as ſowre Graſs, Quitch, Ruſhes, Heath, Gors, Fern, Broom, *&c.* and Land that runs too much to Straw, and yields but a lank ſhort Ear, whether ſuch Lands be hot or cold, wet or dry ; of all ſuch Lands, burning is a very great Improvement, cauſing ſome poor Lands in two or three Years time, to yield as much as the Inheritance is worth.

The uſual Method of plowing of it is with the Breaſt-plough which a Man ſhoves before him, made after the following Manner. At *p.* is a little Edge



turned up, that cuts the Turf off from the reſt of the Green-ſward, by means of which, when the Turf is cut about a Foot and a half long, they turn it over the cuting Iron, being about eight or nine Inches long. With this Plough they pare the Turf about half an Inch thick, except the Land is very full of Strings, Roots, or combuſtible Matter ; then, if 'tis pared thick, 'tis the better ; which they turn over as they cut it, that it may dry the better : If it proves a dry Seaſon, and the Weather hot, it will need no more turning ; But if wet, they raiſe the Turfs and ſet them a little hollow. Some reer them on Edge, and to make them ſtand, ſet them winding like the Motion of a Serpent's going, which gives opportunity to the Wind, and Sun, to dry both ſides : When they are dry, they commonly lay about two Wheel-barrows full to an Heap : But the leſſer the Hills are the better, provided there be enough to make ſuch a Fire as will throughly conſume the Heaps to Aſhes. If the Turf be full of Roots, or have a good head on it, or if it be in a deep Soil, that you may cut it pretty deep, it will burn without the Addition of any other Fuel: If not, they raiſe their Heaps on a ſmall bundle of Ling, Furz, Brakes, or ſuch like Fuel, to ſet it on Fire. Theſe Hills when burnt they let lie till they are a little ſadned with the Rain, before they ſpread them; which they commonly do in a calm time, or after Rain, that the Wind may not carry away the Aſhes, nor hinder the equal ſpreading of them, and they pare the Ground under the Hills ſomewhat lower than the Surface of the Earth to abate its over great Fertility occaſioned by the Fires burning of it. This Land muſt be but ſhallow or half plowed, not above an Inch below the depth of the Aſhes, and not much above half the Quantity of Corn you ſow on other Lands ſown on it, which they reckon beſt ſowed late: If with Wheat, about the latter end of *October* is beſt, becauſe of preventing the over-rankneſs of it.

Theſe Lands they commonly cut the Turff off in *May*, or any time in the beginning of Summer; but the ſooner the better; becauſe of having time to bring the Land into order. The Charge of cutting of the Turf, carrying of it on Heaps, and burning of it, is commonly done for twenty four Shillings *per* Acre, where Men have one Shilling four-pence *per* day for their Work.

In burning of the Turf you muſt take care not to over-burn it; 'tis only to be burnt ſo as may make it break and ſpread well; for the over-burning of it to white Aſhes, waſts the Nitrous Salt: And though the middle part of the Hills will be more burnt than the outſide; yet by keeping of the Fire from breaking out, and by laying of combuſtible matter on the outſide, you may fix the Salts in all parts of it, which is beſt done by a ſlow Fire.

Some ſtub up Furz, Broom, Heath, *&c.* and lay on Heaps, and when dry cover them with the Parings of the Earth, and burn them; others burn their Stubble on the Land, and others gather either Stubble or any other Traſh they can get into Heaps, and burn them; and to every Heap or Hill of Aſhes ſome put a Peck of unſlacked Lime which they cover with the Aſhes, and let it ſtand till Rain comes to ſlack the Lime, and then they ſpread the Aſhes and Lime together. 'Tis obſervable of this Sort of Improvement, that it tends moſt to the Increaſe of the Product; whereas other Manure, as that of Dung, *&c.* increaſes rather the Subſtance of the Straw, and breeds Weeds, than the Quantity of the Grain or Fruit: Though I cannot but think, that if ſome Dung be laid on theſe Lands at the Plowing of them up for a ſecond or third Crop of Corn, which ought to be the time for laying of them down for Graſs, that it will be of Advantage to them, eſpecially if they are of the pooreſt Sorts of Lands.

Chap. III. *Of Chalk.*

CHalk is of two Sorts, the hard dry ſtrong Chalk, which is the beſt for Lime; and a ſoft unctuous Chalk, which is the beſt for Lands, becauſe it eaſily diſſolves with Rain and Froſt. 'Tis a very great Improver of moſt Lands, and will alter and change even the very Nature of them, eſpecially ſuch as have not been chalked before: For 'tis apt to cauſe Land to put forth it ſelf too much; and therefore Land that is Chalked, if 'tis not well dunged and kept in heart, will receive but little benefit from a ſecond Chalking, unleſs it lie a great many Years to recover it ſelf, except it be ſome very particular Sort of Land, which is the Occaſion of that ſaying, That Chalk makes a rich Tenant, and a poor Landlord. For which reaſon the beſt way of making Improvement by it, is to mix but one Load of Chalk with two or three Load of Dung, Mud or freſh Earth, which will make it a conſtant Advantage. 'Tis beſt for cold, ſowre Lands, and commonly makes the greateſt Improvement on thoſe Lands that lie fartheſt from it; becauſe the Lands near it partake and have too much of the Nature of the Chalk in them. They commonly lay twelve or fourteen Loads of Chalk upon an Acre, where they lay it ſingle, which will upon ſome Lands cauſe extraordinary Crops of Corn, for fourteen or fifteen Years together. 'Tis beſt to carry the Chalk on upon a Laye, a Year or two before you Plow it up, becauſe by that means it will ſweeten the Surface of the Earth, and work not ſo much downwards, as it will if plowed up at firſt. It makes Corn to yield well; and where 'tis laid upon Graſs-ground, it will not ſo much increaſe the Bulk of it, as it will make the Graſs Sweet, ſo as to cauſe Cattle to fat ſpeedily, and Cows to give thick Milk.

They have in *Kent* a pretty way of ſaving of Labour in the digging of Chalk, where they dig it upon the ſides of Hills, by undermining the bottom of the Chalk, ſo far as they would have it fall, and upon the Top ſo far as they have undermined the bottom, they dig a ſmall Trench which they fill with Water, which in about a Nights time will ſoak to the bottom, and cauſe a flake from top to bottom to fall the breadth of the place undermined, which ſaves a great deal of Labour and Danger. But as Chalk in moſt places lies a great depth under the Earth, they there commonly dig for it in the ſame manner as the Miners carry on the Shafts of their Mines, and draw it up with Buckets, in which places they commonly ſell it for Six-pence or Four-pence a Cart-load, according as it lies in depth, where Men have one Shilling and Two-pence *per* day for their Work, according to which Price I ſhall make all my Calculations.

Chap. IV. *Of Lime.*

Lime is commonly made of Chalk or of any Sort of Stone that is not ſandy or very cold, as Free-ſtone, *&c.* All Sorts of ſoft Stone, eſpecially a grey dirty coloured Stone, that if you break it will yield a white Powder; and all Sorts of Marble, Alabaſter, Slate, Oyſter and all Sorts of Sea-ſhells, and all Sorts of Flints, will make an extraordinary Lime (but they are hard to burn, except in a Reverberatory Kiln, becauſe they are apt to run to Glaſs,) for the harder the Chalk or the Stones are, the better is the Lime; only they require the more Fire to burn them: Both Sorts may be burnt with Wood, Coals, Turf, or Fern which makes a very hot Fire, The Kilns uſed for Chalk or Stone they commonly make in a great Pit that is either round or ſquare, according as they have conveniency, and big according to the quantity they burn, which they make wide at the Top, and narrow by degrees, as they come nearer to the Bottom: The In-ſide of this Pit they line round about with a Wall built of Lime-ſtone; at the Out-ſide near the bottom, they have a hole or door by which they take out the Aſhes, and above that ſome have an Iron-grate, which cometh cloſe to the Wall round about; but others arch it over with Stone or large Pieces of Chalk; and upon this they lay a Layer of Stone, or of what elſe they burn in the Kiln, and upon that a Lay of Wood or Coals, *&c.* which they repeat 'till the Kiln is full; only they obſerve, that the outmoſt Lay be always of Wood or Coals, or what they burn their Lime with, and not of what they make their Lime, to which they give fire at the hole underneath. Chalk is commonly burnt in twenty four Hours, but Stone often takes up ſixty Hours: Ten Buſhels of Sea-coal, or a Hundred of Faggots three Foot long will burn forty Buſhels of

Chalk, and forty Buſhels of Chalk will yield thirty Buſhels of unſlaked Lime. Where Chalk is ſcarce, you may take the Chalk-rubbiſh and mix it with Water, Working of it together as you do Clay for Bricks, which put into Brick-moulds, and drying of it burn it, and it will make as good Lime as other Chalk. But the Stone-lime is much the beſt for Land, and indeed for all other Uſes; which in many places they carry out upon the Land, and lay in heaps, allowing a Buſhel to a Pole-ſquare, or a hundred and ſixty Buſhels to an Acre, which they cover with Earth, letting of the Heaps lie 'till the Rain ſlacks it, and then they ſpread it: But they reckon that if 'tis carried out upon the Land hot from the Kiln, that 'tis beſt; and that it doth beſt upon light ſandy Land, or a mixed Gravel, and that wet or cold Gravel or Clay are not good for it. Dung, Mud, or freſh Earth mixed with it makes an extraordinary Manure, and is the beſt Way of ordering of it for Land that is ſandy or gravelly. I am told that a Parcel of ſandy Ground in *Weſtmorland* produced an extraordinary Crop of Barly and other Corn, being manured with Stone-lime and Cow-dung mixed together. The Nature of Lime is to work downwards, like Chalk, and therefore 'tis beſt laying of it upon a Laye the Year before you deſign to plow it up. Lime is reckoned to make Corn grow with a thin Husk; but 'tis not a laſting Manure, it ſeldom holding above five Crops.

Chap. V. *Of Marle.*

MArle is of ſeveral Sorts. In *Cheſhire* they reckon five Sorts. *Firſt*, The Cow-ſhut-marle, which is of a browniſh Colour, with blue Veins in it, and little Lumps of Chalk or Lime-ſtone. *Secondly*, Stone or Slate-marle, which is a Kind of a ſoft Stone, or rather Slate of a blue or bluiſh-

Colour, that eaſily diſſolves with Froſt or Rain. *Thirdly*, Peat-marle or Delving-marle which is cloſe, ſtrong and very fat. *Fourthly*, Clay-marle which reſembles Clay, and is near a-kin to it, but is more fat, and is ſometimes mixed with Chalk-ſtones. *Fifthly*, Steel-marle, which is commonly in the Bottom of Pits, that are dug, and is of it ſelf apt to break into ſquare cubical Bits.

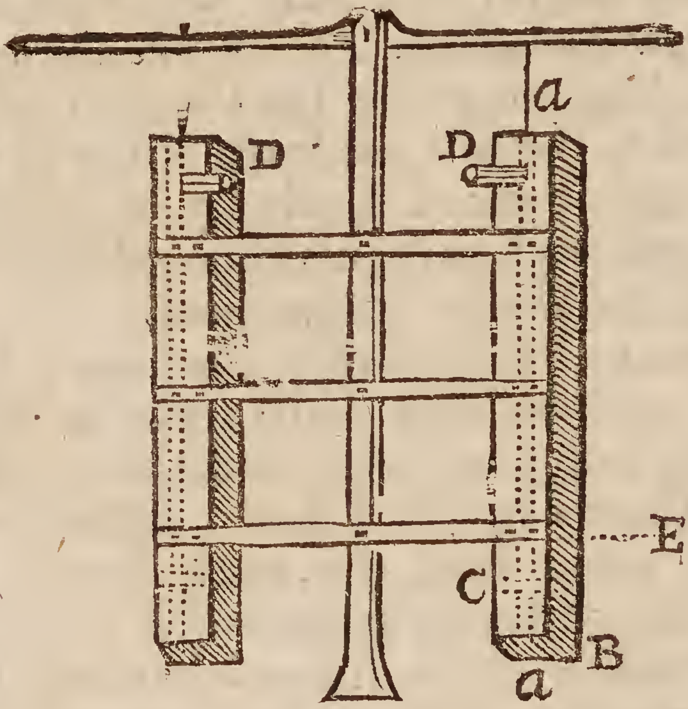
Mr. *Markham* reckons in *Suſſex* four Sorts of Marle, a Grey, a Blue, a Yellow, and a Red Marle; the Blue is reputed the beſt, the Yellow next, and next the Grey; but the Red is leſs durable; the Goodneſs of which is not ſo much known by the Colour as the Purity and Uncompoundedneſs of it: For if it will break into bits like a Dye, or into thin Flakes, or is ſmooth like Lead-ore, and without any Compoſition of Gravel or Sand, it will ſlack like Slate ſtones, and ſhatter after wet, or being expoſed to the Sun and Froſt, will turn to Duſt; or when thorough dry, will not hang or ſtick together like tough Clay, but is fat and tender, ſo as to open the Land 'tis laid on, and not to bind it, you need not queſtion the benefit of it. In *Staffordſhire* they eſteem the Dice or Slate-marle better than the Clay-marle, and reckon the Grey beſt for paſture, and the Blue for arable Land. A great deal of the Marle in the *North* Country, runs much upon the Loam; but that in *Suſſex* is more like Fullers-earth; and therefore muſt certainly be the fatteſt. I reckon Marle much of the Nature of Chalk, and am told by a Potter that when-ever they meet with any Chalk or any Sort of Marle mixed with their Clay, though it will with the Clay hold burning, yet when-ever any Water comes near any ſuch Pots after they are burnt, that both the Chalk and Marle will ſlack and ſpoil their Ware. I ſaw a Sample of Marle from *Derbyſhire* that was a very fat Marle, though it had ſo great a Quantity of Sand in it, that it was ſo ſhort that if you wet it, you could not work it into a Ball, or make it hold together; this ſort of Marle did very well upon Clay-lands, though contrary to the old Saying:

That he that Marles Sand may buy Land,
He that Marles Moſs ſhall ſuffer no loſs,
But he that Marles Clay flings all away.

Becauſe 'twas of a hotter Nature than commonly Marle is, and of a more opening Quality; Marle's binding and ſadning of Land being the great Prejudice that it commonly doth to Clay-lands, as I ſaid before: And though ſome Marle is fat, and ſomething more opening than other Sorts of it, yet the generality of it is of a cold Nature, and will be bound down by the Weight of the Clay; and therefore commonly ſuits beſt with warm hot Lands. But as there are no general Rules without ſome exceptions; ſo where Marle is not laid too thick, nor is of a too tough binding cold quality, it will often mend Clays; eſpecially Grazing-ground, as I ſhall ſhew hereafter: For in the ſuiting of the Land and Marle together lies the chief Advantage; and therefore the beſt and ſureſt Rules to know the Richneſs and Profit of Marle by, is to try a Load or two upon each particular Sort of Soil that you have, and in different Proportions.

Cow-ſhut or Stone-marle is commonly found under Clay, or low black Land ſeven or eight Foot deep. Clay and Steel-marle ſometimes under ſandy Land. 'Tis rare in Clays that it lies above a Yard deep, tho' under Sand 'tis much deeper: But the *Suſſex* Marle commonly ſhews it ſelf at the bottom, or on the middle of the ſides of hanging Grounds.

For the digging of Marle they commonly uſe Pick-axes, Spades, Shovels, and Wheel-barrows; and where the Pit is broad, that they can make an eaſie Aſcent, ſmall Carts which are about four Foot and ten Inches long, two Foot three Inches wide, and fourteen Inches deep, made ſo as a Load may eaſily be ſhot out of them. The Number of Carts muſt be proportionable to the Diſtance that the Marle is carried. They commonly have three, four, five, or ſix Hewers or Diggers to four Fillers, being proportioned ſo as to keep the Fillers always at work: Beſides, to each Cart muſt be a Driver and a Setter, whoſe Office is to ſhew where 'tis to be laid, and to aſſiſt in the unlading of it: Some Sort of Marle requires a Carrier of Water to ſoften it for the Workmen's Shovels; and if there be Springs, as there often are in the Slate-marle, there muſt be help to lade or pump it out, which often occaſions a great Increaſe of the Charge: For the eaſing of which I ſhall propoſe one of the cheapeſt and beſt Pumps that is for this Uſe; which is, to take four Deals or other Boards, which joint and nail well together; and if ſome Plates of Iron be nailed over the Edges of them, it will ſtrengthen them much; theſe Pumps may be made ſingle with a common Pump-handle to them, for one Man to work them,



or double for two Men, as in the Figure, *a a* ſhews the Cylinder of the Pump which is all of a ſize quite through; at the lower End at B is a Valve at the

Bottom where the Water enters, and to retain it when in; at C is the Bucket fitted to the Cylinder of the Pump, with a Valve in the Bottom of it, which opens and ſhuts as the Bucket is moved up or down; ſo that the Bucket being let down to the Valve at B, it may raiſe the whole Column of Water in the Cylinder, and cauſe it to run out at D D; the pricked Line at E, ſhews how deep the Pump ſhould ſtand in Water, which is to the Top of the higheſt Riſe of the Bucket: Theſe Boards may be of what length and breadth you pleaſe, according to the height you have occaſion to raiſe the Water; only you muſt note, that the longer the Pump is, the leſs the Cylinder ſhould be, becauſe of the Weight of Water. One Man may work one of theſe Pumps that is twelve Foot long, and twelve Inches ſquare, which will void a vaſt Quantity of Water in an Hour, with a great deal of eaſe; becauſe the Motion is in Water without any ſucking, which requires a much greater Strength than the Weight of the Water, which ſhews the Fault of the common Pumps in making of them of two different Bores, and of letting of the Bucket to work above the Water; the ill Contrivance of which I have experienced in ſeveral Pumps, and particularly in one of ſixty Foot deep, which I cauſed to be bored quite thro', four Inches and half Bore; the Bucket I let down to the Bottom with Poles, which I grooved together and bound with ſmall Iron-bands: The Poles I made almoſt the Bigneſs of the Bore of the Pump, to eaſe the Weight of the Water in the Cylinder, and it raiſed three times the Water with half the Strength, when it was ſo altered, as it did before; and the Pumps ſo made are without thoſe continual Repairs and Mendings, that the leaſt Defects in Sucking-pumps are conſtantly requiring.

In *Lancaſhire* they uſe a Sort of Sledge that is made with thick Wheels to bring their Marle out with, which are drawn with one Horſe, that being the beſt way, where you have not Wood, Gravel, or other things to mend your Carting-place with, becauſe 'tis not ſo heavy as a Cart, nor will they poach ſo much: But then they require more Drivers: And therefore where you can mend your coming out, the firſt Sort of Cart is the beſt.

Marle is ſuppoſed to be fruitful from its Salt and oily Quality. The Salt they reckon it contracts from the Air; and therefore ſome think that the longer 'tis expoſed to it, the better; for which reaſon they eſteem it beſt to lay it on Graſs-ground three or four Years before they break it up, and when they cover their Land with Marle, not to plow above an Inch into the Soil, that they may not bury it, it being apt to work downward. But Mr. *Markham* is of a contrary opinion, and is for having of it plowed in deep as ſoon as ſpread, becauſe he ſays the Sun waſts the Fatneſs of it. I think him to be in the right, as to the ordering of the *Suſſex* Marle, and the other in the right about the *North* Country-marle; becauſe, as I ſaid before, I think the *Suſſex* Marle much the fatteſt, and that the way of ordering of Marle muſt be according to the Nature of it; for the finding out of which, experience is the beſt Maſter; and 'tis for the ſame reaſon that they lay Marle upon hard binding Lands in *Suſſex* the beginning of Winter, and on ground of a contrary Nature in *Staffordſhire*, in *May* and *June*.

Some propoſe to know good Marle by putting of it in a Glaſs of Water, and if 'tis ſo tender that as ſoon as it comes to the bottom the Lumps break and diſſolve, they eſteem it good, elſe not; if it ſparkle in the Water, and feel fat between the Fingers, 'tis reckoned a good ſign; but the ſureſt is its diſſolving with Wet or Froſt.

'Tis very neceſſary in marling of Land to find out the true Proportion that the Land requires, 'tis better to err by laying on too little than too much, becauſe you may add more at pleaſure.

Marle doth not make ſo great an Improvement on Land the firſt Year as afterwards.

In *Staffordſhire* they lay two hundred Load upon an Acre, which they reckon the out-ſide of what is to be laid, except 'tis upon a black, looſe, or a ſandy Mould, or a wormy Ground: On them they lay three or four hundred Load upon an Acre, and reckon they cannot be marled too much: Their common Obſervation is, That if 'tis a thin Mould, the Marle muſt be laid thin, and in a deep Mould thicker; though there are ſome Lands that Marle only improves by making an Addition to the Depth of the Soil; and they reckon, That if they marle an Acre of Land for twelve or fifteen Pound, that it will turn to good Account. *Quantity.*

'Tis beſt ſowing of Marled-land under Furrow; becauſe if they are well husbanded, they will be mellow and hollow, which will occaſion the Lands ſinking from the Roots of the Corn if it ſtand too high; and the rougher theſe Lands are laid, the better, becauſe the Lumps will diſſolve with the Froſt, and moulder to pieces, and by their breaking help to cover the Roots of the Corn.

If Marle ſadden Land, or make it ſtiff or binding, you muſt dung it well, and lay it down for Graſs.

Where Lands lie upon the ſides of Hills, the Water iſſuing out of them, is apt to carry the Fat of the Marle away, except you can marle the upper Part, ſo as to have it waſh down upon the lower; and therefore flat Lands are beſt for Marle.

Theſe Lands ſhould not be plowed when too wet, becauſe 'tis apt to make them poach and to breed Weeds, and 'tis good to plow them three or four Years, and then to lay them down three or four Years for Graſs; for great care muſt be taken not to plow them out of heart; becauſe after the Land is marled and laid down for Graſs, if 'tis in heart it may be improved by Marle again, after it hath been ſome Years fed; but if not, it will never be improved by Marle again; and you muſt always obſerve, that when you deſign to lay down marled Land, to dung it well the laſt Crop; becauſe it opens the Land, and makes it much more fruitful; eſpecially in natural Graſs, or Graſs-ſeeds; and by this means Marle will laſt good thirty Years upon many Sorts of Land.

In *Staffordſhire* after their Lands are marled, their way is to take the Crops following, *viz.* After the firſt Crop of Wheat is off, they plow in the wheat Stubble in *December*; and if the Weather prove froſty to mellow it, they do not plow it again 'till *April*; when they ſow it with Barly, allowing three Buſhels of Seed to an Acre. Its common produce is thirty Buſhels. After Barly they ſow Peaſe, for which they plow but once in *February* following, allowing three Buſhels to an Acre; and next after Peaſe, (if they intend ſix Crops) they ſow Wheat again upon the Peaſe-crop; the fifth Crop is Barly again; and for the ſixth Years Crop red Oats; Some ſow two or three Crops more when the Land is well marled, but 'tis better let alone.

Mr. *Markham* mentions four Sorts of Land in the Weald of *Kent* and *Suſſex* improved by Marle. 1. A hazel Mould, which he adviſes to be plowed up as deep as it may be, even to the dead Earth, and to lay five hundred of the ſmall Cart-loads of Marle upon an Acre: This Land they ſow with Oats upon a Laye to kill the Graſs; or they marle it in *May*, and ſow it with Wheat, giving of it a Summer-fallowing firſt, and the next Year ſow it with Peaſe, ſowing of them early, and then with Wheat again, if 'tis a moiſt Summer; but if dry, they fallow it again firſt, allowing two Buſhels of Wheat upon an Acre, which is the out-ſide of what he would have ſown: Becauſe if you ſow it thick, it will be ſmall, and the Straw ſlender, which the Wind will be apt to beat down. In *February* he would have the Wheat fed with Sheep, which will trample the Earth the cloſer to the Roots of the Corn: After which, if you roll it, he reckons it will be of advantage to it; and after the taking of two Crops of Wheat, his Advice is to lay it down for Graſs five or ſix Years: And if it grow moſſy or broomy, which theſe Lands are inclined to, then to break it up again, and to order it as you did before, laying of it down again from the Wheat-ſtubble: And thus being interchangeably ſowed and reſted, it will laſt good thirty Years: Whereas if the productive Fat of the Marle be ſpent by often ſowing of it, and expoſing of it to the Sun and Air, it will remain a dead Clod that is not capable of being mended with new Marle.

2. Marle Cope-ground, which is commonly a cold, ſtiff, wet Clay, and not ſo proper to be marled for Corn (except black Oats) unleſs in ſome places where 'tis very fleet for Paſture. Thoſe Lands muſt be plowed fleet, leſt the Marle be drowned with the Wet. Where you have good Drains, and that the Clay lies any thing dry, it may be ſowed with Wheat. Three handred Load of Marle upon an Acre of this Land he reckons ſufficient, and that two Buſhels and an half of Wheat will ſow it, which muſt be ſowed above Furrow fourteen or twenty Days before *Michaelmas*, and ſhould be laid up in round high warm Ridges. Theſe Lands muſt be well-mended with Dung and dry Earth; the Charge of which I cannot think will anſwer, eſpecially if marled with *Suſſex* Marle; and therefore I think their beſt Improvement is for Graſs, which Marle will make very ſweet for eight or ten years, 'till the Marle is ſunk ſo low, that another Cruſt of Earth is grown over it; and then it may be plowed up: But it muſt be done but fleet, and but a Crop or two of Corn taken from it, and then be laid down for Graſs again. Theſe Lands when fallowed, muſt be fallowed very dry.

3. Sandy and gravelly Grounds, which are to be ordered much as the Hazely, ſave only in that more Marle may be laid on them, and that they muſt not be ſo often plowed. 'Tis beſt to plow theſe Lands pretty deep, that the more Marle may be laid on them. They commonly allow five or ſix hundred Loads to an Acre of theſe Lands, which they ſow always under Furrow about *Michaelmas* allowing two Buſhels and a half of Wheat to an Acre, and leave it as cloddy as they can; and after they have taken a Crop from them they fallow them, and ſow them with Wheat again, for they do not reckon them rich enough as yet to bear good Peaſe. This done they let them reſt four or five Years. If they run over with Broom, they cut or pull it up, and after that ſow it with Oats; the next Year they fallow it, and lay three or four hundred Load of Marle upon it, and order it as the hazely Ground, and it will mend them for thirty Years. Where either the ſandy or gravelly Lands are ſpringy or wet, he adviſes rather to marle them for Graſs than Corn, and to lay five hundred Load of Marle upon an Acre. Some propoſe to burn Marle, and then to lay it on the Land; and that where they do ſo, ſixty Load will go as far as three hundred Load not burnt; but they do not mention the Sort of Land 'tis to be laid on, nor of what Sort the Marle is. I have inſerted theſe ſeveral ways of managing of marled Land, that ſo every one may make a particular Application of each way to Land of the ſame Nature; and that (if any do know of any different Sorts of Land, or different Sorts of Marle that are ordered after any other way) they will communicate their Obſervations about them to the Printer hereof.

Chap. VI. *Of Fullers-earth.*

FUllers-earth is of a very fat Nature, and is very full of that vegetative Salt that helps the growth of Plants, which appears in its cleanſing, ſcouring Quality; and tho' 'tis not much uſed for the Improvement of Land, becauſe of the Profit it otherways yields, and becauſe it may not ſo univerſally ſuit a great many Sorts of Land, as Marle doth; yet I cannot but think that it muſt be a very great Improver of ſome Sorts of Land; and of this mind I find Sir *Hugh Plat*, Mr. *Markham*, and others.

Chap. VII. *Of Clay.*

ALL Sorts of Clays are a very great Improvement of gravelly and ſandy Land, by allaying of their Heat, and making of them more ſolid and tenacious, and more conſtant in the Produce of their Crops, and prevents their being ſpoiled with every uncertainty of the Seaſon, altering and changing the very Nature thereof, as I told you before: For, as Mr. *Bernhard* affirms, even Marle it ſelf is a kind of Clay that is become fatter, and of a more inriching Quality by a better Fermentation, and by its lying ſo deep in the Earth as not to ſpend or weaken its Fertility by any Product; which we find it will do when too much expoſed: And therefore Clays that lie the deepeſt muſt be beſt for this uſe. However, Experience and Trial will ſatisfie every one the beſt in theſe Sorts of Experiments, and the Coſt of the Trial will be but ſmall; and ſo there can be no great Hazard, if there is not a certain Gain.

Chap. VIII. *Of Sand.*

AND as Clays are an Improvement to Sand; ſo Sand by the ſame reaſon is an Advantage to cold Clays, in that it warms them, and unlocks their binding Quality. As for Sands found on the Earth, the beſt is that which is waſhed out of High-ways, or from Hills or ſandy Places, by the Violence of the Rains, or that which lies in Rivers: The common Sand that is dug out of the Earth having but little Fertility in it; only by Way of Contraction to Clay-grounds, they may effect much. This *Columella* confirms, and Mr. *Blith* adviſeth for the increaſing of Soil in Winter, where you cannot fold Sheep, to have a Sheep-houſe to feed them in, into which he would have you bring twice a Week ſeveral Loads of Sand out of the High-ways, Streets or Sand-pits; which by the Fatneſs of the Sheeps-dung and Urine, will make an excellent Manure for cold Clay-lands; the ſame will Sand make that is mingled with any Sort of Dung.

Chap. IX. *Of Earth.*

As Marle, Clay, and Sand properly applied, make great Improvements; ſo do particular Sorts of Earths, as all Sorts of a ſaltiſh Nature, the black Moulds that lie in low Meadows, and Mud of Ponds and Rivers, eſpecially if mixed with Dung, are a great Improvement of gravelly, and ſandy Grounds, or any dry Up-lands, and ſo is Earth covered with Hovels, or Houſes, eſpecially ſuch as have any Salt-petre in them: Or if they have been uſed for the folding of Sheep in, as is commonly practiſed in *Flanders*, according to the Way before mentioned of Sand; or if mixed with Lime, or any fat Subſtance, or the Dung of Beaſts, Fowls, *&c.* eſpecially if they are caſt up to ferment together ſometime, or be caſt into low Places, that the Moiſture of Dung waſhes into; which will not only improve the Earth, but moderate the Heat of the Dung, and make it a greater Improvement of hot Grounds, eſpecially for Paſture, and increaſe the Quantity of both Dung and Earth, which it concerns every Husband-man to do as much as he can; becauſe in the Quantity of his Manure conſiſts the chief of his Profit.

Chap. X. *Of Sea-Sand.*

THE richeſt of all Sand is what comes from the Sea-Coaſt, and Creeks, of which they make very great Advantage in the *Weſt* Country; the chief Virtue of which ſome reckon to conſiſt in its Saltneſs, and others in the Fat and Filth that the Sea gathers from the Land-floods, the Shoars, the Fiſh, and things that putrifie in the Sea. I am apt to think that it proceeds from both, and that there is a third thing that contributes to its Virtue as much as any thing, and that is the Fiſh-ſhells that are commonly mixed with it, which the working of the Sea breaks as ſmall as the Sand it ſelf; for the fuller the Sand is of theſe broken Shells, they reckon it the better: Sea-ſhells of any Sort being very great Improvers of Land; eſpecially ſuch as is ſowre or cold; but where they are not broke to pieces by the working of the Sea, 'tis good to break them with an Iron-ſtamper, or rather with ſuch a Mill as they break Apples with; or elſe, which I think the better way, to calcine them, ſo as not to make Lime of them, but to give them ſuch a heat as may cauſe them to moulder and fall to pieces with the Rain and Froſt; becauſe they are a long time elſe before they will diſſolve, eſpecially, if they are of a hard ſtrong Sort, ſuch as Oyſter-ſhells, *&c.*

The Sand uſed for Land is of three Colours: That about *Plymouth* and the Southern Coaſts is of a blue or grey Colour, like Aſhes, which ſome reckon to proceed from the breaking of the Muſcles and Oyſter-ſhells mixed with it. Weſtward, near the Lands-End, the Sand is very white, and in *Scilly* gliſtering, which may be occaſioned from the Mouldering of Moor-ſtones, or a Kind of Free-ſtone mingled with white ſcallop Shells. On the North-

Sea from about *Padſtow*, and Eaſtward to *Lundy*, the Sand is of a brown, reddiſh, yellowiſh Colour, and is compoſed moſtly of broken Cockle-ſhells. In *Falmouth* near St. *Maw*'s Caſtle, there is a Sort of Sand, or rather Coralline, that lies under the *Owſe*, which they are forced to remove before they can come to the Bed of Sand. That Sand is reckoned the beſt that is of a red Colour, the blue next, and the white worſt; the Sand taken up by dredges from under the ſalt Water, or that is left open by the Ebbing of the Tyde, and the Sand that is of the largeſt Grain, is the beſt; though the ſmall grained Sand is eſteemed the beſt, for the Tenant, who only takes three or four Crops; and the large for the Landlord, and the Land, becauſe it abides longer in the Ground, and makes the Paſture afterwards the better. If the Sand be well drained of ſalt Water, ſo as it may conveniently be carried, they reckon it better than if it lie too long in the Wind and Sun. Where the Sand is dredged out of the Sea, a Lyghter-load that contains about twelve Tun, coſts twelve or thirteen Shillings; where 'tis got from a dry Beech after an Ebb, it is not worth above four Shillings the Lyghter. Where the Sand is near, they lay about ſixteen Tun upon an Acre; where they can go three times a Day, they lay about ten Tun; where twice a Day, five Tun; and where but once, two or three Tun: And in ſome places but one Tun, where the diſtance is great.

As ſoon as 'tis brought home they ſpread it on the Ground, from which they commonly take four Crops of Corn, and then lay the Land down for Paſture, for ſix or ſeven Years before they plow it up again; the Graſs will be ſo good, that they commonly mow it the firſt Year; it runs moſt to white Honey-ſuckle or Clover; and though in ſome Lands the Graſs is but ſhort, yet it yields great plenty of Milk and Cream, fats Cattle exceedingly, and mends Garden-herbs and Fruits, making the Corn to have a large Ear, and a ſhort Straw, ſo that ſometimes the Ear of Barly is very near as long as the Stalk: But where little Sand is uſed there is much Straw, and not ſo much Grain. In well-ſanded Lands little or no Snow lies, but there is a continual Spring even in the Midſt of Winter, and the Harveſt is commonly a Month or ſix Weeks ſooner than in other places, and 'tis reckoned to agree with any Sort of Land whatſoever.

In *Cornwal* is a Weed called Ore-weed, which grows upon Rocks under the High-water Mark, and ſome is broken from the Bottom of the Sea by rough Weather, and caſt upon the Shoar by the Winds and Floods, with which they improve their Barly-lands.

Snail-cod or Snag-gret lieth frequently in deep Rivers, and is full of little Shells; one Load of which is reckoned as good as three Load of Dung.

All Manner of Sea-Owſe or Owſie Mud, and the Mud of Rivers, Lakes, or the Bottom of Ditches, the Waſh of Paſtures, Fields, Commons, Roads, Streets, or Back-ſides in any place where the Water meets with reſt, or that Rain-water hath a long time ſettled, or that Sinks run into, are of very great Advantage to all Sorts of Land, eſpecially dry Gravels or Sand, and are mixed with Dung.

In *New-foundland* they improve their Ground with the Garbiſh of Fiſh; and there is no doubt but that moſt things that belong either to the Sea, or Waters, may be of Advantage to the Huſbandman, if judiciouſly uſed; becauſe they are the Receptacle of the Fat that is waſhed from the Lands.

Chap. XI. *Of Dungs.*

HOrſe and Cow-dung are the moſt common Sort of Dungs, by reaſon of thoſe Cattle being the moſt kept up; upon which Account their Soil is with the moſt Conveniency preſerved. Horſe-dung being of the hotteſt Nature is beſt for cold Lands, and Cow-dung for hot Land; or mixed together they make a very good Manure for any Sort of Land. In Winter-time, or when any Rains come, your Dung ought to be turned up on Heaps, and laid as thick as you can, to prevent the Sun's exhaling the Virtue of it, and the Rains waſhing away its Fatneſs, and the Nitrous Quality of it; and to beget the better Ferment in it, the beſt Time to carry Dung on upon Lands, is in Winter, that the Showers may waſh it into the Ground; and becauſe it will then be leaſt expoſed to the Sun. If the Land that you deſign to dung, lie in ſmall Ridges, ſplit your Ridges, by caſting of two Ridges into the Furrow to fill it up, and ſo lay your Dung or other Manure on: Or which is better, plow three Furrows to one, that ſo you may lay your Manure upon the Top of the Land, and not bury it too deep. But where Dung is to be laid on a Summer's-fallow, 'tis beſt to be done juſt before you Twyfallow, obſerving not to ſpread your Heaps, 'till juſt you are ready to plow the Dung in; that ſo caſting of it under Furrow, you may turn the Ridge over it, ſo as to cover it from the Heat and Drought of the Summer-Sun and Wind, 'till you Tryfallow it; at which Time you may raiſe it again, and ſo turn the Dung up that was buried before. But many find fault with the dunging of Corn-land, and ſay, that it cauſes Weeds; and therefore in ſome places, to prevent that Inconveniency, they let their Dung lie 'till 'tis turned to Mould, by which means half the Vertue of the Dung is loſt; for one Load of new Dung for Corn-land is worth two of old: Whereas the occaſion of their Lands being ſubject to Weeds, is firſt from the natural Quality of it; and ſecondly from their laying too great a Quantity of Dung on them at once, many often laying forty or fifty Load upon an Acre; whereas the greateſt Quantity that ſhould be laid upon Clay-lands, if ſown with Corn (which are the beſt Lands to bear Dung) ought not to be above twenty Load upon an Acre, and the red hazely Brick-earth, or light Sands, that are ſubject to Weeds, and that ſpend themſelves in producing of Straw rather than Grain; ten or fifteen Load upon an Acre is enough at a time; becauſe by that means you may be often dunging of them, and renewing of their Surface with freſh Dung: For in two or three Crops they will eat out the Virtue of any Quantity of Dung that is laid on them, and too much Dung doth but increaſe their Rankneſs: But the beſt Corn that you can dung theſe Lands for, is Barly, which delights in a well dunged Soil: But then it doth beſt upon an Etch Crop; becauſe the fallowing of it the next Year will mix the Dung and Earth together, and will abate ſomething of the ſtrength of the Dung, and prepare the Land the beſt for Wheat of any way, as I have often experienced. Indeed upon gravelly or ſandy Land thirty or forty Load may be laid upon an Acre, or more, if 'tis a fleet Soil, and that 'tis mixed with a great Quantity of Earth, Marle, Mud or Clay, *&c.* For by that means you not only qualifie the Dung and mend the Land, but you increaſe the depth of the Soil, which is the beſt way of improving of theſe Sorts of Lands, or any Sort of Graſs-grounds, as I ſaid before: But clean Dung is beſt Barly; and if Dung be laid upon Land ſometime before 'tis ſowed, 'tis much better than to lay it on juſt at the Time of Sowing: and the longer 'tis laid on beforehand the better.

Chap. XII. *Of Sheep's-Dung.*

THis is the beſt of all Dung, eſpecially for cold Clays; which not being ſo conveniently gathered together, as other Dung, is commonly conveyed

veyed upon the Land by folding of the Sheep themſelves upon it; by which means both the Urine and Dung too is ſaved, which ought as ſoon as poſſible to be turned in with the Plough, that it may not be expoſed to the Heat of the Sun: But the beſt Improvement of Sheep's-dung is to fold them in a covered Fold, and to mix their Dung with Earth, Sand, *&c.* as is before mentioned.

I have known vaſt Crops of Rye upon Barren Lands that have been old Warrens, and well dunged with Rabbits.

Chap. XIII. *Of Hog's Dung.*

NExt to that of Sheep, I prefer Hogs-dung, as one of the fatteſt and moſt beneficial of all Sorts of Dung, one Load of which will go as far as two Loads of other Dung; which might be an occaſion of the Ancients miſtake about its being a breeder of Weeds, becauſe of their laying of it too thick, which (as I obſerved before) any Dung will do. 'Tis a very rich Dung both for Corn and Graſs, eſpecially the latter, and for any Sort of Land, but the beſt of all Dungs for Trees; and therefore many good Husband-men prefer it before moſt ordinary Sorts of Manure, and take great care not only to have their Hog's Coat well pailed, and paved with Pebbles, or other Stones, or where 'tis to be had with Chalk, which is much the beſt, and is thereby much advantaged for the Land; but alſo to increaſe the Quantity of the Dung as much as they can by caſting into the Coat all the Straw, Beans, Roots, Plants, Weeds, *&c.* out of the Garden before they are full of Seeds, Fern and other Trumpery, which is not only very good for the Hogs, but ſome have increaſed the Dung ſo that out of a ſmall Hog-coat ſixty or eighty Load of Dung hath been raiſed in a Year. I think the beſt way of ordering of this Sort of Dung is to mix it with Horſe-dung, for which reaſon I am for placing of my Hog-coat as near my Horſe-dunghill as I can with Conveniency.

In *Staffordſhire* on poor light ſhallow Land ſome ſow a ſmall white Pea which they never reap, but turn in ſo many Hogs to eat them as they think they will fat, and there they let them lie Day and Night, and their Dung will ſo inrich the Land, that it will bring a good Swerd upon it, and graſe well many Years afterward.

Chap. XIV. *Of Urine.*

URine by *Glauber* is reckoned to be of a deſtructive mortifying Nature to Vegetables, becauſe of the *Sal-armoniacal* Quality that is in it; but 'tis an indiſcreet Uſe of it by the Application of too great a Quantity that makes it ſo, and even Dung it ſelf will have the ſame effect for a Time where 'tis laid too thick. There is nothing that will improve Land, nor increaſe the Strength of Manure, nor help the Fermentation of Dung more than Urine will do: For which reaſon in *Holland*, they are as careful to preſerve the Urine of their Beaſts, as their Dung; and Mr. *Hartlib* in his Legacy commends it as a very great Improver of Land.

Chap. XV. *Humane Ordure.*

HUmane Ordure is of all Sorts of Dung the greateſt Improver of Land, eſpecially if mixed with other Dung, Straw, or Earth, to give it a Fermentation, and to render it convenient for Carriage, and ſells in Foreign Parts at a much greater Rate than any other Sort of Manure.

Chap. XVI. *Of the Dung of Fowls.*

I Shall begin with Pigeons-dung, as being the moſt experienced, forty Buſhels of which will manure an Acre of Land, and therefore is very convenient where Land lieth at a diſtance, and where other Manure cannot conveniently be carried. Tis beſt for Barly or Wheat, and on cold Lands, it being a very hot Dung: The common way of ordering of it is to ſow it by hand after the Grain is ſowed, and in the ſame manner as they ſow Corn, and ſo to harrow it in with the Seed: For one Crop, this often makes a very good increaſe.

Hens-dung is a very rich Dung, but becauſe of its hanging together 'tis not ſo eaſie to ſow as Pigeons-dung, ſo that you cannot well tell how to give the Land a due proportion, but either it will be too thick or too thin; and therefore 'tis beſt mixing of it with other Dung, or with the Aſh-heap, or with Earth or Sand.

Gooſe-dung by the Ancients has been eſteemed very hurtful and prejudicial both to Corn and Graſs, and is ſo eſteemed by many now, and very unhealthful for Cattle. Indeed in long Graſs that is ready to mow, or in Corn they will do miſchief by treading of it down with their Feet, and eating of it; but for their Dung, it's as good both for Corn and Graſs as the Dung of any Fowl whatſoever, as hath been experienced by many. 'Tis much of the ſame Nature with Hens-dung; and as for the wholeſomneſs of it, at *Sutton* in *Nottinghamſhire* is a Field that was given to the Town for a Gooſe-paſture, whoſe Dung hath made it (I think) one of the richeſt Pieces of Paſture that I have ſeen, and as it lies open in a common Field, I have often obſerved that all Sorts of Cattle covet much to feed on it; nor could I find by any of the Inhabitants that

Cattle feeding on it receive any prejudice from it. I have likewiſe a ſmall Paſture by my Houſe on which my Geeſe lie very much, that I keep a Horſe in, who, I find, eats the Graſs bareſt where they have dunged moſt; nor could I find that ever it did him any injury, except it made him too fat. Beſides, their Dung is uſed in ſeveral Medicines both for Cows and Horſes.

Chap. XVII. *Of ſeveral other Soils, and Manures.*

A*Shes* of all Sorts contain in them a very rich fertil Salt, and are the beſt Manure of any to lay upon cold or wet Lands, eſpecially if kept dry, that the Rain doth not waſh away their Salt. One Load of dry Aſhes will go as far as two Load not kept ſo. But as Rain-water diminiſhes their Salt, ſo the moiſtning of them with Chamberly or Soap-ſuds will add mightily to their ſtrength, as I have often experienced. Two Load of theſe Aſhes will manure an Acre of Land better than ſix Load of thoſe that are expoſed to the Rain, and that are not ordered ſo, which is the common Allowance for an Acre, though ſome Lands do require more, and ſome leſs. That the Aſhes of any Sort of Vegetables are very advantageous to Land, is what is experienced in moſt places of *England*, by the Improvement that is made by burning of Fern, Stubble, Straw, Heath, Furze, Sedge, Bean-ſtalks, *&c.* but of all Sorts of Aſhes I eſteem Sea-coal-aſhes the beſt for cold Lands, and the moſt laſting: If you ſow your Aſhes upon Graſs-ground do it in *April*, but upon Corn juſt after you have ſowed your Seed.

Soap-aſhes Sir *Hugh Plat* commends very much after the Soap-boylers have done with them, both for Corn and Graſs: They are good for cold or ſowre Lands. I am told of one by *Ware* that had a piece of Land that was run over with Broom and Furz, which he manured with Soap-aſhes, and ſowed it ſix Years together with Wheat, and had incredible Crops: But I could not learn what the Nature of the Land was, nor the Quantity that he laid on; ſome ſay it kills all Sorts of Weeds and Trumpery whatſoever.

The Aſhes, after the Pot-aſh Men have done with them, are good for moſt Sorts of Land, only as they have been wet, and ſo the Lee hath drawn out moſt of the Salt, it will be neceſſary to lay them much thicker than other Aſhes.

Soot alſo is very good both for Corn and Graſs, eſpecially what grows on cold Clays or Lands much run-over with Moſs; but Sea-coal Soot is the beſt by much: They commonly allow forty Buſhels to an Acre, but ſome Lands will require more: It produces a mighty fine ſweet Graſs, and deſtroys Weeds and Trumpery. Wooll-nippings and tarred hempen Ropes cut ſmall, and untwiſted, are beneficial for Land.

Raggs are a very great Improvement of chalky binding Lands. Many Loads of them are fetched from *London* to *Dunſtable*, which is thirty Miles, only to lay on their Lands, they coſt about Fourpence *per* Buſhel at *London*. They chop them very ſmall and ſow them juſt after the ſowing of the Corn, allowing four Sacks to an Acre, each Sack containing ſix Buſhels.

All Sorts of Hair of Beaſts, being thinly ſpread or ſown, and ſuffered to putrifie, make a very great Increaſe on Corn-lands, and all Shavings of Horns, Hoofs of Cattle, Blood, Garbidge, &c. is good Manure for Land.

Malt-duſt is an enricher of barren Land, and a great Improver of Barly, which they ſow by hand as they do the Seed, and after the ſowing of it, allowing forty Buſhels to an Acre, but it laſts but one Crop.

Some commend Dyer's-dung as a Manure very good for all Sorts of Land, two Load being ſufficient for an Acre.

All Sorts of Fern, Straw, Stubble, Ruſhes, Leaves of Trees, or any manner of Vegetable whatſoever, caſt into the Dung-yard, before they are near feeding (elſe they are apt to breed Weeds in the Dung) are of great advantage to increaſe the Bulk of the Dung.

Barks of Trees have a very rich Salt in them, eſpecially that of Oak, and ſo hath rotten Saw-duſt or any other rotten Wood, which mixed with Earth makes Land light, enriches it very much, and even alters and changes the very Nature of it, turning of it into a rich black Mould.

In the Coal-mines they uſually dig a kind of blue or black Clay, that lies near the Coal commonly called *Urry*, and is as it were an unripe Coal, which is very proper for hot Lands, eſpecially for Paſture-grounds.

In *Cheſhire* they improve their Lands by letting out the Water of the Salt-ſprings on them, which they do always after Rain; and there is no doubt but that a moderate Quantity of Salt ſown upon Lands, eſpecially thoſe that are troubled with Worms, would be a very great Improvement of them: There being no Lands richer, and that fat Cattle ſooner than thoſe Lands that are but ſometimes over-flowed with the Salt-water; as only at ſome extraordinary Spring-tydes, as may be ſeen in ſome ſalt Marſhes near *Erith*, and in ſome Parts of the Hundreds of *Eſſex*, eſpecially where they have any freſh Water to go to in ſome near adjoining Lands: And therefore I cannot but think that Lands near the Sea might be much improved by watering of them with Salt-water; however in Time of Peace Bay-ſalt would be but a ſmall Charge, conſidering how ſmall a Quantity would manure an Acre.

In *Cumberland* a ſmall Parcel of Land of two Acres and a half is let for Eleven Pound *per Annum.* What improves it to that Value is the emptying of the Town-Tann-pits on it.

Any ſoft Stone, as Fire-ſtone, Lime-ſtone, *&c.* if broke ſmall, and laid on cold Lands muſt be of Advantage to them, as is practiſed at *Hornetton* in *Oxfordſhire*, where they dung their Lands, with the Chippings of a Sort of ſoft Stone that they have there. In fine, whatſoever is apt to rot and conſume in any competent Time, and that is either ſalt, unctuous, or fatty, is good for the Improvement of Land.

All theſe Dungs and Soils before-mentioned are improved by the mixing of them together, and by the giving of them a good Fermentation: The common way of doing of which, is by laying of the Dung on heaps 'till it rots; but the way that would be moſt profitable to the Huſband-man, is to make near his Houſe or Barns a large Pit in length and breadth according to the Quantity of the Soil he hath, and to pave it with Stone or Chalk, that it may detain the Moiſture of the Dung; becauſe the moiſter the Dung lies, the ſooner it will ferment and rot; but if you can have a covering over it ſo as to keep all the Rain-water out of it; or if you can moiſten it with the Urine of your Stables, Sink of your Houſe, *&c.* it will much improve it: For the Rain-water that runs from it, carries away the Salt of the Dung with it, which is the chief Cauſe of its Fertility. But if you cannot have ſuch a Conveniency, lay it as thick on heaps as you can, and in the moiſteſt loweſt Places that you have, covering the Top of it with Turf, or other Earth, to prevent the Sun and Wind from exhaling and drying up the Virtue of it: For the well preparing of your Dung, and the Increaſe of its Quantity, is a Piece of Huſbandry, that great Care ought to be taken of; for the better and greater the Quantity of your Dung is, the better will be your Crop; and the Increaſe of your Crop will make an Increaſe of your Dung; and ſo on the contrary, a Decay in your Dung makes a Decay in your Crop, *&c.* and therefore the Whole of your Profit, and the Value of your Farm depends upon theſe two Points.

BOOK V.

Of ſeveral Sorts of Corn, Grain, &c. *and the Way and Manner of Ordering of them.*

Chap. I. *Of Rye.*

RYE doth well upon any dry Sort of Land whatſoever, though the barreneſt Sand or Gravel. They ſow it about the Beginning of *September*, after a Summers-fallow, in the drieſt Time they can, according to the Old-ſaying of Sowing, *Rye in the Duſt, and Wheat in the Dirt*; They commonly allow two Buſhels of Seed to an Acre; but if 'tis new-broke-up Ground, or Land ſubject to Worms, they allow about a Peck more.

A little ſpringling of Dung or Mud upon Rye-Land, will mightily advance a Crop, though it is laid but half the thickneſs it is for other Corn. Its Produce is commonly about twenty Buſhels upon an Acre.

It is ripe when the Straw is turned Yellow, and hangs the Ear, and that the Grain is hard: 'Tis not very apt to ſhed; and therefore if it is weedy you muſt let it lie upon the Ground or Gravel, as they call it, after it is cut, eight or ten Days before you bind it, if the Weeds are not dry ſooner, or elſe they will give in the Barn, and cauſe it not to thraſh well, and make it muſty. But as it is a Grain that will grow in the Ear the ſooneſt of any if wet, ſo you muſt take care, if Rain comes to turn it once in two or three Days at moſt; and to lay the Ears upon the Stubble as high above the Ground as you can, and it will prevent it: But if it is without Weeds, you may houſe it as you cut it. If Rye or Wheat be lodged, cut it though it be not thorough ripe; for if the Straw is broke, it will yield no more Nouriſhment to the Grain.

Chap. II. *Of Wheat.*

THere are ſeveral Sorts of Wheat, as whole Straw-wheat, red Straw-wheat, Rivet-wheat, white and red Pollard-wheat, Turky-wheat, Gray-wheat, Lammas-wheat, *&c.* ſome of which thrive better, and are more agreeable to ſome Sorts of Land than others, though generally all Wheat doth beſt upon ſtiff Clays, eſpecially if well drained that it lie dry: But as ſome Sorts of Wheat thrive better on ſome Sorts of Lands than others; it would do well if more particular Obſervations about Each Sort were made, than is. The white Egg-ſhell-wheat is reckoned beſt for light Lands, and to ſow with Rye for Meſlin; becauſe 'tis earlieſt ripe of any, and ſhould be forwardeſt ſown. 'Tis much ſown in *Eſſex* upon their hazely Brick-Earths or Loams, as the Red-wheat and the Pole-rivet or Bearded-wheat is there, and in *Hertfordſhire* upon ſtiff yellow Clays. In *Oxfordſhire* they have a Sort of Wheat that they call long Cone-wheat, which they reckon beſt for rank Clays, and its Straw not being hollow makes it not ſubject to lodge or to be mill-dewed, and is not ſo liable to be eaten by the Birds, only the Flour of it is ſomewhat Coarſe. Their white, red-eared Wheat hath a white Ear and a red Grain, and is a very good Sort of Wheat for Clays; it bears a very good Crop, and ſeldom ſmuts. In *Staffordſhire* they reckon the red *Lammas* or Bearded Wheat the beſt for cold Lands or ſtiff Clays. In *Barkſhire* is a Wheat called pendulum Wheat, from its hanging of its Ear much like the Cone-wheat.

Wheat is commonly ſown after a Summers Fallow, though in *Barkſhire* they often ſow it upon a Lay, harrowing of it in as they do Oats, and ſay that it prevents its being full of Weeds; ſometimes in *Hertfordſhire* they ſow it upon an Etch Crop after Barly, plowing of the Barly-ſtubble in as ſoon as the Corn is off the Land. But this is ſeldom done, and only on Land that is very rich. Tis beſt ſowing of it about the Beginning of *September* if you have any Rain; if not, 'tis beſt ſtaying 'till you have: For it will not come up 'till wet comes let it be never ſo long firſt, except the Land is very moiſt juſt before ſowing. I have known Wheat muſtied and ſpoiled ſo as never to come up at all, that hath lain long in the Ground before Rain came: And if your Land be any thing dry, it will do well enough if ſown in *November*. All the Hazard of late ſowing is a wet Winter and wet Land. They commonly ſow two Buſhels of Wheat upon an Acre: But if new-broke-up Ground, two Buſhels and a Peck. If the Soil be deep, ſow it under Furrow: But if 'tis fleet, with a broad Caſt, which ſome do with a ſingle Caſt, and ſome with a double Bout, that is to ſow it twice in a place, harrowing once between, after which they harrow it ſo many times in a place as is neceſſary to cover the Seed well.

If your Wheat or Rye be rank, it will do well to feed it with Sheep in *January* or *February*, only you muſt obſerve not to feed Rye after the firſt, nor Wheat after the Middle of *March*.

If *May* prove dry, the Corn will get above the Weeds; if not, weed it about the latter End of *May* at fartheſt: The Thiſtles cut with a Hook, but the Docks, Tyne, Tares, May-weed, &c. pull up by hand.

Wheat is ripe when the Straw is turned yellow, that it hangs its Ear, and that no Greenneſs appears in the Middle of it; and if when you bite the Grain, you find it hard. Its common Produce is twenty or thirty Buſhels upon an Acre.

If Wheat is weedy it muſt lie upon the Gravel, and be ordered as they order the Rye. But in *Oxfordſhire*, and ſeveral other Countries, they bind up their Wheat in Sheaves, tho' tis full of Weeds, and ſet three Sheaves againſt three Sheaves, and cover the Top by opening of two Sheaves, with which they cover the ſix under-ones, hanging of the Ears downward, and ſo they let their Wheat ſtand three Weeks or a Month in the Field, before they carry it in, for no wet can hurt it; nor is Corn ſo ſet ſubject to grow.

Chap. III. *Of Barly.*

THE *Barly* ſown in moſt places is commonly of one Sort; but in ſome places they ſow *Sprat* or *Fullum* Barly which is the beſt for rank Land, becauſe it doth not run ſo much to Straw, as the common Sort, and yields much better.

In *Oxfordſhire* is a Sort that they call Rath-ripe Barly, which hath ſome years been ſown, and returned into the Barn in two Months time; ſome call it *Patney* Barly, becauſe they commonly have it from *Patney* in *Wiltſhire*. It may be ſown the latter End of *May*, and yet be ripe early enough.

In *Lincolnſhire* they ſow a Sort of Barly that they call *Scotch* Barly. It hath a ſquare Ear: Tis but a lank Grain, but 'tis a hardier Sort than the other Sorts of Barly are, and will grow upon a meaner Soil, and is earlier ripe.

In *Staffordſhire* is *Tritico-Speltum*, or a Sort of naked Barly, or Wheat-barly, that is ſhaped like Barly, but the Grain is like Wheat; 'tis much ſown at *Rowley*, *Hamſtal*, and *Redmore*, where they call it *French* Barly: It makes good Bread, and good Malt, and yields a good Increaſe; and therefore would do well to be tried in other places.

Barly is ſown either after a Fallow, or on an Etch, or ſecond Crop. If after a Fallow, the Land muſt be three times plowed in Summer, as for Wheat, only the third time it muſt be laid up in ſmall Ridges to lie all Winter: In *March* they ſplit the Ridges and harrow them well over, making of the Land as fine as they can, and then they plow it up to ſow.

Turneps. Some at the time of Twy-fallowing in *June* make the Land very fine, and ſow it with *Turneps* which they feed with Sheep in Winter, and then plow it up in *March*, ordering of it as before; or you may plow it up but once juſt before you ſow your Barly.

If you ſow your Barly upon an Etch after Wheat, as ſoon as the Time of ſowing of Wheat is over, which is commonly about the Beginning of *October*, plow up your Wheat-ſtubble in as dry a Time as you can, and lay three Ridges to one, if you have Dung to lay on it; if not, plow it in ſmall Ridges as before is directed, becauſe the Land will lie the dryer, and the Froſt will mellow it the better: Then plow it up again in *March*, and order it as before. If 'tis ſown after Oats, you may only plow it once in *March*; but if you plow it in *October* too 'tis the better: Or if you have an early Harveſt and dry Weather, and that your Time will allow of it, it will be a greater Improvement of your Land, if you plow it up before you ſow your Wheat juſt as Harveſt is in; this will make it half as good as a Summers-fallow. But all Years will not allow the doing of it this way.

One in *Eſſex* that lives near a large Market-Town where he hath good Quantities of Dung, ſows his Land with Barly and Clover; he reaps his Corn at Harveſt, and feeds his Clover all Winter, in Spring he mows or feeds it 'till the Middle of *July*, and then fallowing of it, in Spring he ſows it again with

Barly and Clover, which he repeats every Year, and hath very great Crops; his Land is a light rich Mould, ſomewhat inclining to a gravelly Bottom.

Some ſow Barly in ſmall Ridges like Wheat, and ſome on broad Lands, which the rounder they are laid the better: But all Sorts of Ridges they rowl with a Roller at the coming of the firſt Shower of Rain that comes after the Barly is ſown, for to break what Clods were unbroken before, to ſettle the Earth to the Roots of the Corn, and to make it even to mow.

The Time of ſowing of Barly is in *March*, *April*, or *May*. If the Land is ſubject to Weeds, 'tis beſt ſowing late; but 'tis commonly beſt to take the firſt dry Seaſon that you have, dry Weather being beſt for moſt Summer Corn. But if you do ſow late, ſoak your Barly twenty four Hours in Water, in which Sheeps-dung hath been infuſed, and it will come up preſently; this way you may ſow Barly about the Middle of *May*, and it will do well, if want of good Weather, or Buſineſs, oblige you to ſtay ſo long. 'Tis beſt to ſow light Lands firſt, the beſt Lands to ſow late, being the Clays.

'Tis ſown with a broad Caſt at two Bouts or Sowings, the firſt ſowing being harrowed in once, and the ſecond ſowing as many times as is needful to cover it well, and to make the Earth fine, which commonly requires ſix or ſeven Harrowings. The common Allowance of Seed is four Buſhels to an Acre, though they ſay that three Buſhels of Sprat Barly will do.

It delights in a light dry Ground, ſuch as is the black rich Mould, and in moſt Sorts of Clays that lie dry, if made rich with Dung, Aſhes, Chalk, or Lime; on ſome Lands Pigeons-dung, Malt-duſt or Soot do well firſt. Sir *Hugh-Plat* commends Soap-Aſhes as an extraordinary Improver of Barly, even upon barren Lands.

Barly is ripe, when the red Roan, as they call it, is off (that is a reddiſh kind of Colour that is on the Ear) when it hangs its Ear, and that the Straw hath loſt its Verdure. If it is full of Weeds it muſt lie on the Swath 'till the Weeds are dead: 'Tis not apt to ſhed, but in wet Weather it will be inclined to ſprout or muſt; and therefore every fair Day after Rain it ſhould be ſhook up and turned; and as ſoon as it is any thing dry, be made up into Cocks. Its common Produce is two or three Quarters upon an Acre.

Chap. IV. *Of Black Oats.*

BLack Oats are commonly ſown upon an Etch-Crop, or on a Lay; which they plow up in *January*, when the Earth is moiſt, taking care to turn the Turf well, and to lay it even and flat.

Oats are ſown with a broad Caſt at twice, as they do Barly, harrowing of it well in: Only you muſt obſerve to harrow the ſame way the Furrows lie of a Lay, or but very little croſs, for fear of raiſing the Turf; but upon an Etch as ſoon as the Land is plowed on edge, they ſow it, and then harrow it once, and ſow it again a ſecond Time the full Quantity, and then harrow it five or ſix Times over, obſerving to harrow once or twice croſs; which breaks the Clods and covers the Seed better than harrowing all one way. They commonly ſow them on a broad Ridge, which they give the Land but one plowing for.

The uſual Time of ſowing of black Oats is the latter End of *February*, or the Beginning of *March*, they being a hardy Grain that will bear any thing of wet or cold: Four Buſhels of Seed being the uſual Allowance for an Acre. They will grow on any Land, but delight more in a moiſt cold Land than in a dry.

Oats are ripe when the Straw turns yellow and the Kernel hard, when the Chaff begins to open and to ſhew the Seed.

When they are cut, let them lie for the Dew and Rain to plump them, and to make them thraſh well; and if weedy, to kill the Weeds; but if Rain wet them much, you muſt get them in as ſoon as they are any thing dry again, or they will ſhed; for Oats may be inned the wetteſt of any Corn without much prejudice to them, eſpecially if the Weeds are but dead: But white Oats are apt to ſhed moſt as they lie, and black as they ſtand.

Chap. V. *Of White Oats.*

WHite *Oats* are commonly ſown upon an Etch after Wheat, Rye, or Barly; they only give the Land one plowing, and ſow them and harrow them as they do black Oats, except the Land is ſubject to Weeds; then 'tis good to plow the Wheat or Rye-ſtubble up in *November*, which will make it rot the better, and be a kind of Winter fallowing: Only if you have a very dry burning Ground which black Oats will not delight in, in that caſe they often ſow them upon a Lay.

The uſual Time of ſowing of white Oats is in *April*; the dryer the Time is that you ſow them in, the better. They love a dry Land, and will do well on Gravel and Sand, and are the beſt Corn to ſow on Grounds ſubject to Quitch-graſs or other Weeds, becauſe they may be plowed later. They come up ſooner, and top the Weeds better than black.

As to the mowing and ordering of white Oats at Harveſt, 'tis the ſame with that of the black; the common Produce of both black and white Oats is about twenty Buſhels upon an Acre.

In *Staffordſhire*, and almoſt all the Northern parts is a Sort of red or naked Oats that is extraordinary good for Oat-meal, becauſe the Kernel thraſhes out of the Hull without carrying of it to the Mill, or drying of it: They order theſe Oats as they do Barly.

Chap. VI. *Of Buck-Wheat.*

B*Uck-Wheat* or Brank, is a Grain very uſeful and advantageous in dry barren Lands. 'Tis commonly ſown about the Beginning of *May*. One Buſhel will ſow an Acre. After 'tis mown it muſt lie ſeveral days 'till the Stalk (which is ſomewhat hard) be withered before it is houſed. 'Tis in no danger of the Seeds falling, nor doth it ſuffer much by Wet; but 'tis ripe pretty late. It yields a good increaſe upon Land any thing good, often fifty or ſixty Buſhels upon an Acre, and is excellent Food for Hogs, Poultry, *&c.* The Flour of it is very white, and makes a very good Sort of Pancake mixed with a little Wheat-flour.

Buck-Wheat makes a very good Lay for Wheat or Rye, eſpecially if not mow'd, but plow'd in; but the beſt way is when 'tis in Graſs, juſt before it bloſſoms to feed it with Cattle, eſpecially milch Cows, which it will cauſe to give a great deal of Milk, and make both the Butter and the Cheeſe very good, and yield Food for your Cattle in the drieſt Time of Summer, when all other Graſs is burnt up, and prove a very great Improvement of your Land.

Chap. VII. *Of Peaſe.*

P*Eaſe* are of ſeveral Sorts, as, white, green, grey, *&c.* moſt of which require different Sorts of Land and Management; and therefore if more particular Obſervations could be made of them, it would be of advantage to Huſbandry, all codded

Grains being a Deſtroyer of Weeds, an Improver of Land, and a Preparer of it for other Crops. But Peaſe and Beans are what belong to Garden-Tillage, as well as that of the Field; and as I deſign not to meddle with any thing of Gardening at preſent, ſo I ſhall confine my ſelf only to what relates to the Management of them in the Field.

The common Sort of white Pea doth beſt in a light Land that is ſomewhat rich: If the Land is any thing binding, they do beſt ſown with a broad Caſt, and only harrow'd in: The beſt Time for ſowing of them, is about the middle or latter End of *April*; they commonly allow three Buſhels to an Acre.

Peaſe are commonly reaped with a Hook at the End of a long Stick: They let them lie in ſmall Heaps as they are reaped, 'till they find the Hawm and the Codd dry. They ought to be turned and raiſed from the Earth as much as you can, that they may lie hollow for the Wind to dry them, eſpecially when any Rain comes to wet, and beat them down.

In *Staffordſhire* they ſow Garden-Rouncivals in the Fields, and find them to kernel well, and to yield a good Increaſe, though they run upon the Ground unſupported with Sticks,

Gray-peaſe are commonly ſown under Furrow, and delight moſt in a cold moiſt Clay: The common Allowance for ſeed is two Buſhels to an Acre, and the uſual Time of ſowing them is in *February*: In ſome places they ſow them ſooner, they being a hardy Grain. They are reaped, and ordered much as the White-pea.

In *Oxfordſhire* they reckon the *Henley* gray and the Red ſhank Peaſe are the beſt for new-broke-up Ground, the Vale-gray for ſtrong Land, the *Hampſhire* Kids for new chalked Lands, the ſmall Rathripe Pea for poor gravelly Ground, and the *Catswold* Pea for ſowre Land.

Chap. VIII. *Of Beans.*

B*Eans* are of ſeveral Sorts, but 'tis only the ſmall Horſe-bean that is commonly propagated by the Plough. They delight chiefly in a ſtiff ſtrong Clay, and thrive not in light or dry Grounds. They are commonly ſown in *February*, or ſooner. Three Buſhels will ſow an Acre. They commonly reap them with a Hook, like Peaſe, and let them lie out a great while to dry. In the North they bind them up in ſmall Bundles, and make ſmall Ricks of them in the Field, where they let them ſtand a long time. The common Produce of them is about twenty Buſhels on an Acre.

Vetches. The *Chich*, *Fetch* or *Vetch* are of ſeveral Sorts, but the moſt known are the Winter and the Summer *Vetch*; the one ſowed before Winter, which abides the Extremity of it, and the other in Spring. They are a good, ſtrong and nouriſhing Food for Cattle, either given in Straw or without, and are propagated after the Manner of Peaſe.

Lentils. The leaſt of all Pulſes is the *Lentil*, in ſome places called *Tills*: They require but an ordinary Ground; and though but very few of them are ſown upon an Acre, yet they produce an incredible Quantity, though they ſeem but of ſmall Bulk, and lie in a little room in the Cart. They are a very good ſweet Fodder, and to be preferr'd before any for Calves, or any other young Cattle, and are the cheapeſt Food for Pigeons.

Tares. *Tares* are of as great advantage to Land, as other Pulſes are, but are rather to be preferred to feed Cattle with than any other thing, only the Seed is good for Pigeons. They are commonly ſown in *February*, and require a dry Ground. They need but one plowing, and want no other Manure but the plowing in of the laſt Stubble, becauſe they enrich the Land themſelves. You muſt be careful not to ſow more than you can cover the ſame day, becauſe the Dew is apt to ſpoil them.

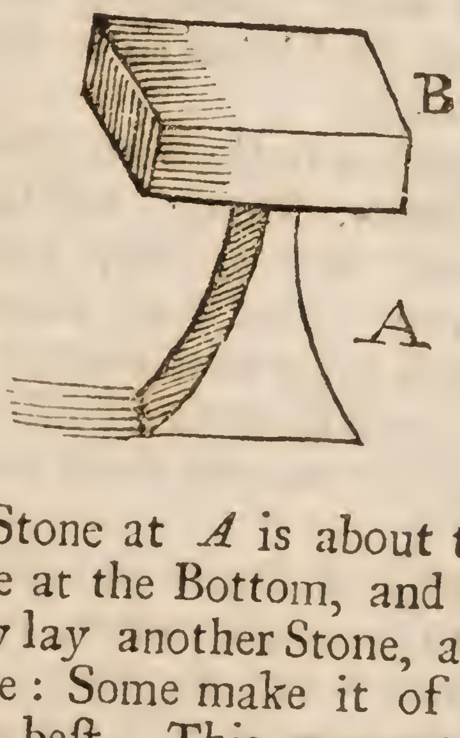
Some ſow Horſe-beans and *Tares* together, which is a very good way of ordering them. They are eaſily parted with a Riddle.

There are ſeveral other Pulſes or Seeds mentioned in many Authors, that are not yet brought into common Uſe, which if more particular Obſervations were made of them, might in many places be more uſeful than they are. But of them I ſhall treat farther, when I have procured a more particular Account.

Chap. IX. *Of Preſerving of Corn.*

THE Preſerving of Corn when it is cheap and good, is not only a very great Advantage to the Huſbandman, but likewiſe to the Poor; for in ſcarce and dear Times the Huſbandman hath little to ſell to advance his Stock, and the Buyers are uſually furniſhed with muſty bad Corn from Foreign Parts (who often buy our Corn when cheap, and ſell it to us again when dear) or from ſuch as were ignorant of the ways of preſerving it. Therefore in cheap Times it will be neceſſary to make uſe of ſome of theſe following ways for the ſtoring up of Corn againſt a Scarcity, which he may be ſure of buying in cheap in dry Years, and be certain of ſelling dear in wet ones.

The common ways of keeping Corn are in the Straw unthraſhed, or in the Granaries when 'tis thraſhed. As for the keeping of it in the Straw, the common way is to make it up into Stacks, by which way they often have very great loſs by the dampneſs of the Ground, which commonly rots and ſpoils it, ſometimes near a Yard thick; and by Rats and Mice, and other Vermin that breed in the Stack, which eat and devour a great part thereof. To prevent both which Inconveniences, where Timber is plentiful they ſet four, or ſix, or more Poſts into the ground, according to the Bigneſs that they deſign the Stack, Granary or Barn that the Corn is to be laid in: On theſe Poſts they lay what is the Ground-plats of other Building, upon which they make a Floor, or lay Pieces croſs to ſupport the Stack: And if they make a Barn or Granary of it, they erect Sides and a Roof upon it; but if only a Stack, they cover it with Thatch, and the Poſts that ſupport it ſome do round with Tin near the Top, for about a Foot or ſo in breadth, to prevent the Mice and Rats getting up. But as Tin is apt to ruſt, and ſo to loſe its ſmoothneſs, it will not keep them down long; and therefore a better way to prevent their getting up, is to do them with *Dutch* Tyle, ſuch as they ſet Chimneys with, which will always keep ſmooth. But in *Hampſhire*, and other Countries where they have plenty of Stone, they make their Supporters of two Stones, after this Form, which is the beſt way.



The lower Stone at *A* is about three Foot high, two Foot wide at the Bottom, and one at the Top, Over this they lay another Stone, as at *B*, of about a Yard ſquare: Some make it of a round Form, which is the beſt. This prevents not only the Mice and Rats from climbing up, but alſo the

Dampneſs of the Ground: And this way you may keep Corn as long as you will, without much Inconvenience or Loſs, except what it loſeth in the firſt Years ſhrinking, and loſs of Weight: Only you muſt obſerve, that what Corn you ſtack, muſt be bound up in Sheaves, that ſo the Ears of the Corn may be turned inward, and the Straw-ends out, which will ſave the Corn from Pigeons, Crows, and other Fowls, and likewiſe from the Rain that beats on the ſides. If your Stack be of Wheat, you may lay Oats or other coarſe Grain on the Top of it, under the Thatch, the greateſt danger of Wet being from the Top if any of the Thatch ſhould blow off. And if you ſuſpect any Rats or Mice got into the Stack, greaſe a Stick and thruſt it into it; and if there be any, they will gnaw the Stick. The chief Inconvenience that attends this way of keeping of Corn, is its Bulkineſs, and the Farmer's wanting of his Straw to make Dung with, and the Chaff to give his Cattle, *&c.* Which ſeveral Occaſions may compel him to thraſh out his Corn: And therefore I ſhall conſider the ways of keeping it, after 'tis thraſh'd and dreſs'd, in Granaries, which are made divers ways, according to the Nature of the Country, and the Materials it affords, and the Cuſtom of the People.

Some Granaries are made with Clay mixed with Hair, chopp'd Straw, Mulch, and ſuch like: But theſe are the worſt, becauſe they harbour Vermin, and ſooneſt corrupt Corn: For although they are warm, which is a great Preſervation of Corn, yet they yield Duſt, and from that Duſt are bred Fleas, Mites, Weevels, *&c.* which ſpoil Corn and make it eaſily rot.

Others are made of Stone and Lime; but they are ſubject, againſt wet Weather, to give and be moiſt, which is very bad for Corn, and will muſt it; and ſo will thoſe made of Brick; and therefore ſome propoſe as the beſt, either thoſe Buildings that are made with Stone only, and Plaiſter laid on the inſide an Inch and a half thick, that ſo no Stone may come near the Corn; or elſe to be made of Brick mix'd with Timber, to which Boards may be faſtned to line the Walls with, and the Floors to be of Plaiſter, which is cool in Summer and hot in Winter, and is a great help in the keeping of Corn; and that the Windows of your Granaries be to the Eaſt or North-Eaſt, becauſe it keepeth the Corn always dry, freſh, and cool: And if likewiſe you have Holes to let the Air blow through, it will do well.

The Granary in the City of *Shenibank* in the Vale of *Parinburg*, upon the River *Elbe*, which is a Storehouſe for the Wheat of which the Mum is made at *Brunſwick*, is made after this manner. The Granary is three hundred Foot long, eighteen Foot wide within, ſeven Stories high, each Story ſeven Foot, all built of Brick, with large Windows round to open and ſhut cloſe, which as the Wind blows, are opened, and then the Men turn the Corn, ſo as the Duſt may fly out: And when the Weather is fair they open the Windows to let in the Air. At each end, and in the middle, are Stoves to keep fire in, in moiſt Weather, and at the going away of great Froſts and Snows, to prevent Moiſture. There are alſo in each ſide of the Granaries three long Troughs or Spouts in the upper Lofts, and in fair Weather the Men throw the Corn out of the upper Loft, and ſo it falls into another Spout made about ten Foot wide at the top, and eight or ten Inches at the bottom, through which the Corn falls into the lower Rooms, and then is wound up by a Crane fixed in the upper Loft; and ſo the Corn falling down from one Story to another, is cleanſed by the Wind from all Duſt and Chaff, and receives the Benefit of the Air, *&c.* Theſe Troughs and Spouts are to be put on and taken off as occaſion requires, to any of the Windows, that when any Veſſels come to lade Corn, they may by theſe

Spouts convey the Corn into the Barges, without carrying it on Men's backs, *&c.* The Wall of the firſt Stories is two Bricks and an half thick, two Bricks the three next Stories, and a Brick and an half to the top. There may be kept in it fourteen thouſand Quarters of Corn, which is two thouſand Quarters in each Loft, or one thouſand Buſhels in each Bay, there being ſixteen Bays, each eighteen Foot long, about ſeventeen wide, or three hundred ſquare Feet in each Bay, *&c.*

If with the Troughs there were Holes in the Floor to let the Corn, like Sand in an Hour-glaſs, run from one Floor to another, I believe it would ſave much Labour, and be of much more Advantage to the Corn.

In the hot Countries, in dry ſandy Ground they make great Caves or Pits to keep their Corn in; the inſides of which they make very ſmooth, and put ſome of the Chaff in firſt, and then their thraſhed Wheat, filling of it up within a little of the top, upon which they lay Chaff again, 'till 'tis quite full and cloſe the top with a broad Stone, covering of it up cloſe with Earth; by which way they keep it good many Years.

Some cut off the Ears, and put them up cloſe into a tight Cask, which will keep it very well, and is the only way of carrying any Sort of Corn over the Sea, that you deſire to ſow in a Foreign Country.

The beſt way of keeping Corn in *England* is to build a Barn of Brick or Stone, plaiſtered a good thickneſs within, about four Foot high above the Ground; upon which put a pretty broad Board ſloping, to prevent the Mice and Rats from going up: Upon which erect a Barn, and let the Door and Loop-holes, to put the Corn in at, be above the ſhelving Board, ſo as to go in and out of it with a Ladder, which you muſt be careful always to take down, and not leave ſtanding up when you come out, leſt the Mice get up it into the Barn.

I know this to be an effectual way of keeping Vermin out; becauſe a Gentleman in *Hertfordſhire* built one of this Faſhion, and no Mice or Rats did get into it. By this means there is no loſs of Room at the bottom, as there is in a Building ſet upon Supporters. This Sort of Barn, as high as the Brick or Stone-work comes, muſt be lined with Boards, and the Floor raiſed at the leaſt a Foot above the Earth that is on the outſide of the Barn, to prevent any Damage being done to the Corn by the Moiſture of the Earth, or Walls. This Floor I would have covered with Plaiſter made of Stone-lime, where 'tis to be had: Where not, let it be boarded throughout. In this Barn you may lay up your Corn in the Straw; and if you have occaſion to thraſh out your Corn, to make room to lay more, or for any other reaſon, you may thraſh it out, and at one End of the Barn lay a Layer of Straw of about a Foot thick, and upon that a Layer of Corn and Chaff mixed together, and upon that another Layer of Straw, which continue 'till your Corn is all laid up; or you may mingle your old thraſh'd Corn with the Straw of the new: Either of theſe ways you may keep it as long as you will. And I think this the beſt way; only I know ſome will pretend a mighty inconvenience in this Sort of Barn, becauſe they cannot run a Load of Corn into it, if wet comes. But that Inconvenience may be eaſily remedied by having a large Barn for Hay near it, with a Porch to run it into. They that have none of theſe Conveniencies, but are obliged to lay their Corn in a common Room, let them make a hole in the Door to let the Mice and Rats in and out at, and ſtop all the other holes that the Mice or Rats make in the Room with Wool dipped in Tarr, and to the hole in the Door have a ſmall Scuttle to ſhut down when you go in to keep in what Mice or Rats are there; and round the Room, about four Foot high from the Ground, place a ſhelving

Board that the Mice and Rats may not run up the Walls; and with Brooms, *&c.* you may kill a great many of them. But for Barns, I think thoſe boarded on the ſides the beſt, being the leaſt ſubject to harbour Mice of any.

I ſhall conclude this point with ſome particular Remarks upon the keeping of ſeveral Kinds of Corn.

Wheat. Firſt of *Wheat*, which is the moſt principal Grain, and of greateſt Uſe and Price, being the moſt tender and apteſt to take hurt of any; and therefore ought not to be laid above a Foot thick on the Floor, and obſerve that the Corn you intend to keep, be had in dry; and that no Wheat that is thraſhed before *March* is fit to keep long. In moiſt Weather (if it be not kept in the Straw or Chaff) take care to turn your Wheat once in four or five Days.

Rye. *Rye* is much of the ſame Nature with Wheat, and is to be treated after the ſame Manner.

For the keeping of Meal, there is no better way than firſt to bolt it, and ſearce it from the Bran, which is very apt to corrode and putrifie it, and make it muſty. You may put it into clean dry Caſks, that are tight and well bound, treading of it in as hard as poſſible you can, and then head it up cloſe.

Beans. *Beans* are a more groſs ſort of Grain than Wheat, and more ſubject to be moiſt and to give in the Mow; and therefore thoſe that are to be kept are not to be thraſhed 'till *March*, that they have had a thorough ſweat in the Mow, which they are very apt to; becauſe Beans and Peaſe are not all ripe, together, and ſo the green do often heat the ripe, and the ripe ſo heated give fire to the green, 'till both be either rotted or conſumed; to which alſo the bigneſs of their Leaves, and hardneſs of their Stalks, which continue moiſt and ſappy a long time, doth much contribute; for which reaſon they commonly chuſe rather to ſtack them without doors, than to houſe them, that ſo the Sun and Air may dry them. But the beſt way is to kiln-dry them, or to dry them well in the Sun, and then they will keep many Years, though they are laid never ſo thick, and are not turned, or any care taken of them: For Beans never give again if they are once thorough dry.

Peaſe are eſteemed, of all Grain whatſoever, the moſt ſubject to rottenneſs and imperfection; becauſe they are very apt to breed Worms, Weevels, and Mites, by reaſon of the luſciouſneſs and ſweetneſs of the Grain. They are to be ordered much as you order Beans; the drying of them either in the Kiln or Sun, being the beſt way to preſerve them, and likewiſe to make them fit for the feeding of Cattle; becauſe the drier they are, the more thirſty they make them, it being a general obſervation, that if Cattle drink well, they will feed well; but what you keep for food muſt not be too much dryed, becauſe it will make them take up double the time in boiling. *Peaſe.*

If you lay them in Granaries, 'tis beſt to lay them in thick Heaps, or in Bins; for that will preſerve them moiſt the longer; for the ſpreading of them thin on a Floor dries them too ſoon, and taketh from them much of their ſweetneſs and goodneſs. But the beſt way to keep thoſe that you deſign for your own ſpending, is to thraſh them as you uſe them, or to put them into cloſe Caſks, and head them up.

Oats are the leaſt ſubject to the breeding of Vermin of any Grain, and are defended with a double Huſk. The beſt way to keep them after they are thraſhed, is to dry them well either on a Kiln, or with the Sun, and to keep them in Hutches, or cloſe Caſks, obſerving that they muſt not be thraſhed before *Chriſtmas*; becauſe they are not fit for keeping before that time. *Oats.*

Barly, if it lie in the Mow unthraſhed, will keep well for one Year, but when it is made into Malt, which muſt be done before the heat of Summer comes *Barly.*

on, it muſt not be kept above a Year and a half, or two Year at moſt; if you do, it will be filled with Weevels; but if the Weevels do get into it, Wormwood laid in the Malt is a good thing to kill them, and likewiſe Oak-aſhes. Bins are the beſt things to keep it in.

Muſty. But if it happen, that you have any Corn by the moiſture of the Weather, or neglect of turning, that proves *Muſty*; I am told that if you ſpread it thin on a Cloth, and lay it out all Night in the Dew, and dry it next Day in the Sun, it will make it ſweet.

Chap. X. *Of Thraſhing and Cleanſing of Corn.*

I Wiſh ſome better Methods were found out for the Thraſhing and Cleanſing of Corn from the Chaff, than is; and for thoſe ways that are found out, I think, for the Cleanſing of Corn, that in moſt places the worſt way is commonly made uſe of; which is either a Wicker-fan, or a Fan with Sails: Whereas I am ſatisfied that one Man with a Caſting-ſhovel, which is uſed but in few places, will cleanſe as much Corn in a day, as four Men with either the Wicker or Sail-fan.

Chap. XI. *Of Hemp and Flax.*

HEmp and *Flax* are Commodities that deſerve better Incouragement than they meet with amongſt us, both for their uſefulneſs and Profit. But we are got into the way of a Foreign Trade for them, and ſo are altogether remiſs about their Incouragement; though they are what not only deſerve the Care of particular Perſons, but of the Government too.

Hemp delights in a black rich Mould; the richer and ſtronger, 'tis the better, if it be warm and dry. I have known extraordinary Crops of Hemp on Lands where Hay and Wood-ſtacks have ſtood. Though where Land is a little ſandy or gravelly, provided it be rich and of a deep Soil, it will do well: But it will not thrive on cold Clays, or Land that is wet or mooriſh. 'Tis very good to deſtroy all ſorts of Weeds; but as 'tis eſteemed a Peeler of Land, 'tis beſt to ſow it upon Lands that are rank, and not to repeat the ſowing of it too often upon the ſame Land. *Hemp.*

The beſt Seed is the brighteſt, and that which will retain its Colour and Subſtance when rubbed. Three Buſhels will ſow an Acre. The richer the Land is, the thicker it muſt be ſown; and the poorer the thinner. Some do not give the Land a plowing 'till juſt they ſow it; but others order it as for Barly; and when they ſow it, they make the Mould very fine like Garden-ground: And they obſerve not to lay it too deep in the Ground, but to cover it as lightly as they can. From the beginning to the end of *April*, is the time of ſowing of it, according as the Spring falls out earlier or later, but the earlier 'tis ſown, the better; if 'tis a dry time, it muſt be carefully preſerved from the Birds who are very greedy Devourers of the Seed.

The Seaſon of pulling of it is firſt about *Lammas*, when a good part of it will be ripe; that is the light Sammer-hemp that bears no Seed, which is called Fimble-hemp: When 'tis ripe the Stalks grow white, and the Leaves fall downwards, turning yellow at the top; it muſt then be pulled forth, dried, and laid up for Uſe. You muſt be cautious not to break what you leave, leſt you ſpoil it, becauſe 'tis to grow 'till near *Michaelmas*, before it will be ripe: This is uſually called Karle-hemp. When you have gathered it, bind it up in bundles; the Fimble-hemp in ſmall bundles as big as may be graſped in both hands; and the Karle-hemp in Bands of a Yard-compaſs (according to Statute-meaſure) which ſome lay in the Sun three or four Days to dry, and then ſtack it up, or houſe it, ſo as to keep it dry, till they can thraſh out the Seed. An Acre of Hemp in the beſt Land, commonly yields about two or three Quarters of Seed, and the Seed with the Hemp unwrought is worth often from five Pound to eight Pound, but if wrought, from ten Pound to twelve Pound, or more. But the Fimble-hemp is not worth above half ſo much as the other. 'Tis a very great help to the Poor; the Hemp-harveſt coming after the other Harveſt, affords them continual Imployment in the bad, wet Winter-ſeaſons, and to ſuch as are not capable of better Work.

Chap. XII. *Of Flax.*

FLax is alſo a very excellent Commodity: The tilling and ordering of which is a very good Piece of Huſbandry: It will thrive in any good ſound Land whatſoever, but that is the beſt for it that hath lain long unplowed; and the beſt and richeſt Land yields the beſt Flax, and makes the beſt Improvement: But as it robs the Land much, ſo the rankeſt Land and the ſeldom ſowing of it upon the ſame Ground is beſt (as was ſaid before of Hemp.) The Land muſt be well plowed, laid flat and even, and the Seed ſown in a warm Seaſon; about the middle of *March*, or beginning of *April*, is the common time for the doing of it: And if a wet Seaſon happen, it will require careful Weeding.

The beſt Seed is that which comes from the Eaſt Country, although it coſt dear; it will laſt well two or three Crops, and then muſt be renewed again: Of the beſt ſort of Seed two Buſhels will ſow an

Acre; but there muſt be more of other Seed: You muſt be careful that it grow not over ripe; it ripening ſomething after the Hemp, muſt be pulled as ſoon as you ſee the Seed begin to grow brown and bend its Head downwards; at which time let the Pluckers be nimble, and tye it up in handfuls, ſetting them up 'till they be perfectly dry, and then houſe them. If Flax is pull'd when 'tis in the Bloom, it will be whiter and ſtronger than if let ſtand 'till the Seed is ripe; but then the Seed will be loſt.

But the Method and Way of Watering, Pilling, Braking, Tew-tawing *&c.* of Hemp and Flax, being a particular Buſineſs that requires them that are uſed to it, and have knowledge in it, I ſhall leave it to ſuch as are experienced in it, and only note that in *Nottingham* and *Derbyſhire*, where a great deal of Linen is made, they have a good way to ſave the laborious Work of beating of Hemp; by making the Axle-tree of their main Wheel of their Corn-mills longer than ordinary, and placing of Pins in them to raiſe large Hammers like thoſe uſed for Paper and Fulling-mills, with which they beat moſt of their Hemp.

Chap. XIII. *Of Rape and Cole-Seed.*

R*Ape* and *Cole-ſeed* is another excellent Piece of Huſbandry and Improvement of Land, eſpecially Marſhy or Fenny Lands newly recovered from the Sea, or any rich rank fat Lands; the ranker they are the better: But they will do well on any Lands that are dry and warm. The beſt Seed is that which is biggeſt, faireſt, and of a clear Colour like the beſt Onion-ſeed, and dry; 'tis uſually brought from *Holland*; but a great deal that is very good grows here.

The time of ſowing of it is about *Midſummer*; the Land being fallowed in *May*, muſt be twy-fallowed in *June*, and made very fine, and laid even before 'tis ſown. About a Gallon or four Pound will ſow an Acre. 'Tis ſown for two Uſes; for the Seed, or for Winter-food to feed Sheep, Cows, *&c.* in *January*, *Febuary* and *March*, when other Food is wanting; for which uſe it turns to great advantage in the more ordinary ſort of Lands, it being only in the richeſt Lands, that 'tis beſt to be kept for Seed, becauſe it there grows rankeſt and ſtrongeſt: And when it hath been cut, the Stubs of it will ſprout again, and afford excellent Nouriſhment for Sheep: Only when Sheep are firſt put into it, care muſt be taken for the firſt four or five Nights, to put them out into ſome Graſs grounds, becauſe Coles are apt elſe to make them ſwell, and to fill them with Wind like Clover. When it is cut for Seed, they commonly reap it, as they do Wheat; and when one half of the Seed begins to look brown, is the time to cut it: They lay two or three handfuls of it together to dry, which commonly takes up near a Fortnights time, during which it ſhould not be turned, leſt the Seed ſhed, which 'tis very apt to do: And therefore when they gather it, they do it carefully into large Sheets, in which they carry it into the Barn, and thraſh it out immediately: But in *Lincolnſhire* they commonly thraſh it in the Field upon a large Sheet, having under it levelled a piece of Ground for that purpoſe. Its common Produce, where it is good, is five Quarters upon an Acre, which is uſually ſold for about five Pound. The common uſe of it is to make Oil: 'Tis a very good preparer of Land for Barly or Wheat.

Chap. XIV. *Of Turneps.*

Turneps are of three Sorts; the round which is the moſt common; a long Sort that grows much in *Suffolk*, and the yellow Turneps: Theſe are commonly ſown in Gardens, but are of very great Advantage to be ſown in Fields, not only for the uſe of the Kitchen, but for Food for Cattle in Winter, when other Food fails: They delight moſt in a warm, mellow, light Land, that is rather ſandy than otherways. A Pound and a half or two Pound will ſow on Acre. They are commonly ſown at two Seaſons of the Year; in Spring for to run up to ſeed that Summer, which is uſed to ſow again, or to mix with Cole-ſeed to make Oil of, where they have a Quantity; or at *Midſummer*, the Land being firſt plowed in *May*, and twy-fallowed in *June*, and made very fine. The Seed being harrowed in with a Buſh, they rowl the Land with a wooden Roll to break the Clods; and with the Turneps ſow'd at this Time of the Year they feed Sheep, Milch-cows, or fatting Cattle, about *January*, *February*, or *March*: But for fatting Cattle they commonly in *Suffolk* give the Turneps to them in the Houſe, which they pull up, and carry to them twice a day, either in a Wheel-barrow or in a Cart, according to the Number of Cattle they have. They uſed to cut them in ſmall pieces, which now they find an Inconveniency in, becauſe the Cattle were apt to ſwallow them without chewing, which often choaked them; and therefore they now give them whole. In feeding of Cattle with them in the Houſe, they propoſe two Advantages; one is, that it prevents the Cattle ſpoiling of them with their feet; and the other is, that they reckon the Cattle ſo kept up, do fat much ſooner and better than thoſe that ramble about. Hogs alſo will eat them, if they are firſt boiled; only you muſt obſerve, that what Cattle you fat with them, for about a Fortnight before you kill them, they muſt be fed with Hay or other Provender to prevent their Fleſh from taſting of the Turnep. They are a very great help in dry barren Lands, and will grow almoſt in any ſort of Ground; only the Fly is ſometimes apt to eat them at their firſt coming up; but if they do, there is no great loſs in ſowing of them again, the Seed being ſo cheap, and ſo ſmall a Quantity ſowing of an Acre. But to prevent the Fly, ſome propoſe to ſow Aſhes with the Seed, and others to ſow Soot juſt at their firſt coming up; but I have not experienc'd the benefit of theſe ways. There is likewiſe a black ſort of Caterpillar that doth ſometimes eat them; which if you find, the beſt way is to rowl them with a wooden Roller, which will cruſh them to pieces; eſpecially if done in a dry time, and will do the Turneps no hurt, but rather make them root the better. If your Turneps come up too thick, it will hinder the growth of the Root, which is the chief part to be taken care of; and therefore if they come up too thick, they ſhould be thinned with a Hoe; for which work where a Man hath Fourteen-pence a day, they commonly give from four to nine Shillings an Acre, becauſe this Work they ſometimes do twice over, if the Turneps thrive and flouriſh much. If too much Wet, or the Richneſs of the Ground cauſe them to run too much to Leaves, which is a Fault in Turneps, the feeding of them, and treading down ſome of the Leaves, will help their rooting. Some ſow them upon their Stubble as ſoon as the Corn is off, and only harrow them in, and reſerve them 'till late in the Spring for food for Ewes and Lambs or fatting of Cattle; eſpecially if you ſow them on Land that you deſign to fallow, you may then reſerve them 'till *April*, which is the ſcarceſt time for Food for Cattle of the whole Year, eſpecially for Sheep and Lambs but then you muſt have a mild Winter: And if the Hardneſs of the Winter ſhould ſpoil them, neither the loſs of Seed nor Labour will be much. Many ſow Cole ſeed and Turnep-ſeed together, which do very well, becauſe the Profit of the one lies in the Tops, and of the other in the Roots.

Chap.

Chap. XV. *Of Madder.*

Madder is eſteemed a very rich Commodity, and what will turn to good profit; ſo that in King *Charles* I's Time it was made a Patent Commodity. 'Tis uſed by the Dyers for making of the moſt ſolid and richeſt Red, and by the Apothecaries for its medicinal Virtues. There is but one kind of *Madder* that is manured and fit for uſe, though there are many things like it, and that are reckoned a wild ſort of it, as Gooſe-graſs, Ladies Bedſtraw, Woodroof, and Croſſwort: The right ſort hath long Stalks and trailing Branches, rough and full of Joints, every Joint being ſet with green rough Leaves, in manner of a Star: The Flowers grow at the top of the Branches, of a faint yellow Colour; after which comes the Seed, which is round and green: The Root creepeth upon the ground, intangling of one Root into another; and when it is green and freſh, is of a reddiſh Colour: 'Tis ſmall and tender, and runs on the Earth, like Ivy along a Houſe or Tree; and tho' it bears a Seed, it comes to no Perfection, but is raiſed out of Setts, which may be had of the Gardeners about *London.* In *March* and *April* is the time of getting of them, as ſoon as they ſpring two or three Inches out of the Ground; be careful to have them well rooted, and that every Sett have ſome Suckers or Spines of Roots going out of them. They muſt be ſlipped from the main Root, and as ſoon as ever they are taken up, put into a Baſket with a little Mould, and ſet as ſoon as they can. 'Tis to be planted in a very rich, deep, warm Mould, digged two full Spits deep, and raked very fine, planting every Sett about one Foot aſunder every way: And if it be a dry Spring, they muſt be kept continually with watering until they begin to ſprout, and be continually kept with weeding and hoeing until it hath got the maſtery of the Weeds. You may ſow ſome early Sallet-Herbs, as Radiſhes, Onions, or ſuch things as will be ripe betimes, amongſt it. In caſe any Sets die, you muſt ſet new in their room. The time of its growing 'till it comes to Perfection is three Years: The firſt Year you may take off ſome few Sets here and there, but that is ſomething dangerous; but the ſecond Year you may take off what Setts you will, if you leave but the main Root: In the taking up of every Root there will be one Runner, which hath little Buds on it, which may be divided and cut into a Fingers length; ſo that each Sett be planted with one Bud out of the Ground, one Runner will make many Setts; but theſe Setts cannot be taken up 'till the Madder be taken away; And having preſerved it until it come to a good Crop, and dried it as you do Hops, to a juſt and perfect Gage of Drought, you muſt pare off the Huſks of the outſide (in which there is an Art) which will be worth not above nine or ten Shillings a hundred, which they call Mull-Madder; but the ſecond Sort called Number O, which is the middle Rind, is much better, but not ſo good by a ſixth Part as the third Sort, which is called the Crop-madder, which is the Heart and Pith of it, inclining to a yellow Colour. Sometimes the beſt Madder is worth eight or nine Pounds a hundred, and the Number O ſix Pounds ten ſhilling, and ſometimes not above four or five Pounds a hundred. The Dyers uſe great Quantities of it; many of them an hundred Pounds worth in a Week: So that if it were more propagated, there would be vent for it. Some tell you of two or three hundred Pounds made of an Acre of Land planted with Madder, in three Years time.

Chap. XVI. *Of Woad.*

W*Oad* or *Wade* is a very rich Commodity, and worth the Huſbandman's taking notice of; 'tis uſed by the Dyers to lay the Foundation of many Colours, eſpecially all ſad Colours. It requires a very rich Soil that is dry and warm; if it be a little gravelly or ſandy it will do well, and if it have long reſted, and be in heart; but the richeſt Garden Earth near great Towns is the beſt, tho' 'tis ſown in many other places. If 'tis long continued it robs Land much; but moderately uſed, it prepares Land for Corn, abating the over-much Fertility of it where Land is too rank. The Land for this Seed muſt be finely plowed, harrowed, and all the Clods and Turfs broke, and the Stones picked up, and carried off. The time of ſowing it is about the beginning or middle of *February*. 'Tis continually to be weeded; but if it come up good, it will need the leſs weeding. The common price of weeding of it is about Eight-pence an Acre. 'Tis ripe when the Leaf comes to its full growth and retains its perfect Colour and lively Greenneſs, which is ſometimes ſooner and ſometimes later, as the Year proves dry or moiſt. As ſoon as 'tis fit to cut, let it ſpeedily be done, that it may not fade, nor wax pale. Good Woad may yield in a plentiful Year five or ſix Crops; but it ordinarily yields but four, ſometimes but three: eſpecially if you let it grow for Seed; what grows in Winter they do not uſe, but 'tis very good Food for Sheep: The two firſt Crops are the beſt, which are uſually mixed in the ſeaſoning; the latter Crops are much the worſe, which, if mixed with either of the former Crops, ſpoil the whole.

When it is cut, it muſt immediately be carried to the Mill; the manner whereof, with the way of ordering it, is beſt learned from experienc'd Workmen, and is not to be truſted to from a bare Deſcription of it. It many times ſells from ſix Pounds to thirty Pounds a Tun, an Acre commonly yielding about a Tun.

Chap. XVII. *Of Weld or Dyer's-weed.*

W*Eld* or *Would* is a rich Dyer's Commodity, and is of great Advantage, conſidering the eaſie Charge of raiſing it. It grows in many places wild, and will grow upon the barreneſt ſort of Land, tho' the middling ſort of Land is beſt for it. If it be dry and warm, it requires no Tillage. The Seed being ſowed with Barly or Oats, and only harrowed in with a Buſh, or rolled with a Roller. The greateſt difficulty is the ſowing of it even, it being a ſmall Seed. A Gallon of it will ſow an Acre. It grows not much the firſt Summer; but after the Corn is cut it muſt be preſerved, and the next Summer you will receive your Crop.

You muſt be very cautious in the gathering of it, that the Seed be not over-ripe to fall out, and that neither the Stalk nor Seed be under-ripe; becauſe if 'tis, both will be ſpoiled. 'Tis to be pulled and bound up in little handfuls, and ſet to dry, as you do Flax, and then houſe it carefully, that you ſpill not the Seed, which may be beat out preſently, or kept 'till *March*; only you muſt take care to keep it as dry as you can. The Seed ſells for about ten Shillings a Buſhel, or more. The Dyers uſe it for dying of bright Yellows and Limon-colours. 'Tis much ſown in *Kent*, eſpecially about *Canterbury*, and often yields from forty Shillings to ten or twelve Pounds an Acre.

Chap. XVIII. *Of Liquorice.*

L*Iquorice* delights in a warm, rich, black Earth, that is well dunged and very deep; becauſe in the length of the Root conſiſts the greateſt Advantage: And therefore 'tis much planted near *London* and ſome other great Towns where is plenty of Dung; tho' the moſt noted places are *Pontefract* in *Yorkſhire* and *Godliman* in *Surry*, which is pretty much of a ſandy Soil; only it may be much improved near the Town by Dung, which may make it a rich Garden-mould. The Land for Liquorice muſt be trenched very deep, at leaſt three Spits or more, and laid as light as poſſible it can be. The beſt way is to dig the Dung in the beginning of Winter, and then to dig it again at planting time, which will lay it much the lighter, and mix the Dung the better: The oldeſt Dung, that is almoſt turned to Mould, being the beſt for this Uſe.

Procure your Sets from the beſt and largeſt Liquorice: The beſt Setts are the Crown Setts or Heads got from the very Tops of the Root: The next ſort are the Runners, which ſpread from the Maſter-roots, and have little Sprouts or Roots to them, which being cut four or five Inches long make excellent Setts; the Branches alſo may be ſlipped and planted; and if it prove a wet Year, they will many of them grow and ſerve to thicken your Plants when they are thin.

The uſual time of planting of Liquorice is in *February* and *March*, which they ſet in rows by a Line at about a Foot diſtance, making holes with a Setting-ſtick deep enough to contain the Plant; which you muſt earth up as ſoon as you can, becauſe the Setts are impatient of being planted; and therefore where they are removed far, they ſhould be carried in Earth, and the Ground ſhould be made ready before-hand. If the Earth is dry, water them as ſoon as ſet, which continue to do ſeveral days, 'till you find they have recovered their Witheredneſs. The firſt Year you may ſow the Ground between them with Onions, Lettice, and ſuch like Herbs.

The time for digging of the Liquorice up is in *November* or *December*, after it hath ſtood three Summers; for then it weighs moſt, and will keep beſt for ſome time; but the ſooner 'tis diſpoſed of, the better; becauſe while it is green and new, it will not loſe of its weight. Some that have had good Liquorice have gained much by it. The better the Land is, the more is the Advantage. There have been made from fifty to a hundred Pounds of an Acre of Liquorice, as ſome affirm.

Chap. XIX. *Of Saffron.*

English *Saffron* is eſteemed the beſt in the World, and is a Plant that ſuits our Climate and Soil. It delights in a good, dry, ſound Land brought into perfect Tillage, and made mellow by Manure and good Huſbandry: The lighter and richer your Land is, the better Crop you may expect. The time of planting it is about *Midſummer*; ſome ſay that *March* is the beſt time. It is increaſed by the Roots, which yearly multiply in the Ground like other Bulbous Roots, or rather more. They are to be taken up and new planted once in three Years, and then many of the Roots may be obtained, which they commonly ſell by the Buſhel. The way of ſetting them is in ranges, which they make with a large Hoe about two or three Inches deep, like a Furrow; in which Ranges they ſet the Roots two or three Inches aſunder, but the Ranges are four or five Inches diſtant, for the more convenient weeding and hoeing of them: And after one Range is ſet they begin another, and with the Earth of this ſecond Range they cover the firſt, and ſo continue their Work 'till finiſhed, making each Range or Furrow, as near as they can, of a depth.

About *September* the Flowers appear like a blue *Crocus*, and in the Middle of it come up two or three

Chives which grow upright, when the reſt of the Flowers ſpread abroad; which Chives are the Saffron, which you muſt gather gently with your Finger and Thumb early in a Morning, or elſe it will return into the Body of the Flower again, which you may continue to do for about a Months time; for which Work you muſt provide as many hands as the Quantity of the Land will require. You may gather two or three Crops, and then remove it to freſh Ground. After it hath done flowering it remains green all the Winter; but the tops, in the beginning of Summer, die wholly away to all Appearance, which time is one of the chief Seaſons for hoeing it.

Care muſt be taken in the drying of it, which may be done in a ſmall Kiln that conſiſts of an oaken Frame, lathed on every ſide, twelve Inches ſquare in the bottom, and two Foot high, and two Foot ſquare at the Top; upon which is nailed a Hair-cloth ſtrained hard by wedges drove into the ſides with a ſquare Board, and a Weight of about a quarter of a hundred to preſs it down: The inſide of the Kiln is covered all over with Potters Clay very well wrought with a little Sand, a little above two Inches thick: The bottom muſt be lined with Clay four or five Inches thick, which is the Hearth to lay the Fire on, wherein muſt be a hole to put in the Fire. The outſide may be plaiſtered over with Lime and Hair. It muſt be dried with a very ſmall Fire, and will require conſtant Attendance: Three Pound of it moiſt uſually produces one Pound dry; and an Acre of Land may bear from ſeven to fifteen Pound, and is commonly ſold from twenty Shillings a Pound to five Pounds a pound, as the Markets happen. They commonly compute the Charges of it at four Pounds an Acre, which gives room for a conſiderable Advantage.

In *Oxfordſhire*, about *Norton* and *Aſhton*, grows a Sort of Herb that they call *Safflow* or *Baſtard Saffron*, *Safflow.*

which the Dyers uſe for the dying of Scarlet, which they plant in rows about a Foot diſtant for the Conveniency of hoeing it. It grows upon a round Stalk three or four Foot high, and at the Top bears a great open ſtalky Head, out of which are thruſt forth many Gold-coloured Threads of a moſt ſhining Colour, which they gather every day as they ripen, and dry them.

Chap. XX. *Of Hops.*

HOps are a very valuable Commodity; only as they require a great deal of Care and Induſtry, ſo few make that Profit of them that they do. They delight moſt in rich black Garden-mould that is deep and light, and that is mixed rather with Sand than Clay; but moſt Sorts of Lands will do for them, unleſs ſtony, rocky, or ſtiff Clays, which are not to be commended for the Hop. In *Kent* they reckon new Land beſt for Hops, and therefore they plant their Hop-gardens with Apple-Trees at a large diſtance, and with Cherry-Trees between; that when the Land hath done its beſt for Hops, which they reckon it will in about ten Years, the Trees may begin to bear; the Cherry-Trees laſt about thirty Years, and by that time the Apple-Trees are large they cut down the Cherry Trees.

Where Land is any thing ſowre or cold, burning of it is a very great help to it; and if the Haum and Strings of the Hops be burnt every Year, and ſome of the paring of the ſides of the Garden or other Earth be laid on them as they burn, and then more Haum laid over them, and ſo continued Layer upon Layer, it will make excellent Compoſt to make the Hills with: If you can obtain a piece of Land a little inclining to the South that lies low and warm, and that is defended by Hills or Trees from impetuous Winds, and where ſuch a Fence is wanting

ing may be planted with ſhelter, and that is of a deep Soil, and where Water may be at command in Summer-time, it is the beſt piece of Ground for a Hop-garden.

To prepare the Land.

The Ground you deſign to plant, muſt, the beginning of Winter, be plow'd or digg'd up, and laid very even; croſs which ſtretch a Line in which Knots are tied at ſuch diſtances as you deſign your Hills. Some plant them in Squares, Chequerwiſe, which is the beſt way, if you intend to plow with Horſes between the Hills; others plant them in form of a Quincunx, which is the more beautiful to the Eye, and better for the Hop, and will do very well where the Ground is but ſmall, that you may overcome it with the Breaſt-plough or Spade: But which way ſoever it be, pitch a ſmall Stick at every place where there is to be a little Hill; and when it is ſo done, if your Ground be poor or ſtiff, or not rich enough, bring into it the beſt Mould you can get, or Dung and Earth mixed together, and at every Stick dig a hole of about a Foot ſquare, fill it with your Mould or Compoſt, and ſetting your Plants in it they will thrive the better, and the ſooner come to bear.

Diſtance of the Hills.

There is a great Variety both in the Judgment and Practice of moſt Men about the diſtance of the Hills, by reaſon of the different Seaſons of the Year, as being too dry or moiſt. If your Ground be dry and burning, about ſix Foot may be a convenient Diſtance; but if it be a moiſt, deep, rich Soil, ſubject to bear large Hops, then eight or nine Foot is the moſt convenient; and ſo, according to the Goodneſs of the Soil, you muſt place the diſtance of the Hills where you have a new Ground to plant; but in an old Ground, if your Hills are too far aſunder, the beſt way to remedy that Inconveniency is by increaſing the Number of the Hops in the Roots in each Hill, by which means you may apply more Poles, for Hills may be made of that bigneſs to require ſix, ten, or twenty Poles; and if your Hills are too near together, you may alſo abate Hops, and apply the fewer Poles; for over-poling of a Ground, as well in number as height, injures it more than under-poling.

Time of Planting.

Some adviſe the planting of Hops in the end of *March*, or in *April*; but the beſt experienced Planters prefer *October*, before the Cold of the Winter, and ſay, that then the Hops will ſettle and ſtrike Root againſt Spring. Chooſe the largeſt Setts you can get, which are to be had beſt out of Gardens well kept, and where the Hills have been raiſed very high the precedent Year, which increaſeth the Plants both in number and bigneſs. Let them be about eight or ten Inches long, and have three or four Joints or Buds. Before you have your Setts out of the Ground, make the Holes ready to put them in if you can, elſe you muſt lay them in cold moiſt Earth, and take them out as you have occaſion for them. Dig your Holes according to the depth of your Plants, eight or ten Inches deep, and about a Foot over. Some take two or three of the Plants and join them together with one hand while they fill the Hole with fine Mould prepared and made ready for that purpoſe, obſerving to ſet the Tops even with the Surface of the Earth, and the ſame end uppermoſt that grew ſo before, and then they faſten well the Earth about the Roots. Others place at each Corner of the Hole a Plant, which way is to be preferred before the other. It is convenient to raiſe the Earth two or three Inches above the Setts, unleſs you plant ſo late that the green Sprigs are ſhot forth; then you are not to cover them wholly, leſt you ſpoil them. Beware of wild Hops, which are only diſcovered by the Stalks and Fruit.

Dreſſing of Hops.

If your Hops are old and ill-huſbanded, or worn out of heart, then about the beginning of Winte dig about them, and take away as much of the old

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barren Earth as you can, and apply good fat Mould or Compoſt to their Roots: if you cannot do it ſo ſoon, do not neglect it longer than *January* or *February*, if the Weather be open, ſuch Winter-dreſſings being a principal Renewal of decayed Hops; it will likewiſe kill the Weeds, Quitch-graſs, *&c.* But if your Hop be in good heart and ſtrong, dreſſing of them in *March* is moſt proper: Some do it in the beginning of *April*; it will reſtrain their too early ſpringing, which is the cauſe of many Injuries to the Hops, and kills the Weeds the better.

In dreſſing of Hops you muſt pull down your Hills, and undermine them round about 'till you come near the principal Roots, and then the upper or younger Roots. Shake off and remove the Earth away from them with your hand; you may ſee where the new Roots grow out of the old Setts: In the doing of which, be careful of the old Setts; but for the other Roots, they are to be cut away. You ſhall not need to ſpare them to the delay of your Work, except ſuch as you mean to ſet; and take heed that you uncover not any more of the Tops of the old Setts in the firſt Year of cutting: And at what time ſoever you pull down your Hills, do not cut your Roots 'till *March*. When you firſt dreſs your young Hops, cut away all ſuch Roots or Sprigs as grew the Year before. Cut off your Setts within one Inch of the ſame. Every Year after you muſt cut them, as cloſe as you can to the old Roots, but to a weak Hop ſome of the chief of the new Shoots are to be left at dreſſing; the not obſerving of which hath often much decayed a Hop-garden. The Roots that grow downwards are not to be cut, 'tis only thoſe that grow outward at the ſides of the Plant that are to be meddled with, becauſe they will elſe incumber the Ground. The old Roots and the young may be diſtinguiſhed, in that the firſt are red, and the latter white. If there are any wild Hops, you muſt take up the whole Hill and new plant it, marking the Hill with a Stick at Hop-harveſt-time to prevent Miſtakes. When you have dreſſed the Roots, apply your rich Mould or Compoſt to them, and make not the Hills too high at firſt, leſt you hinder the young Shoots: And if the Hops are ſpringing out of the Hills you need not fear cutting them off when you dreſs them; and be ſure to keep all poultry out of the Hop-ground, eſpecially Geeſe.

Poling Hops. The Number, Length, and Bigneſs of the Poles are to be provided according to the Diſtance of the Hills, Nature of the Ground, and Strength of the Hops. If the Hills are wide, there muſt be the more Poles, ſometimes four or five to a Hill; if the Hills are near, two or three may ſuffice. In hot, dry, hungry Ground, the Poles may ſtand nearer than in rich mellow Land, where they are more ſubject to grow groſs and heavy. Alſo if your Hops be ſtrong, and your Ground rich, provide large Poles either in Bigneſs or Length, or elſe you will loſe the beſt of the Profit for want of Poles; but if they are poor, provide but ſmall Poles, leſt you impoveriſh the Root; for the Hop will ſoon run it ſelf out of heart if over-poled; more eſpecially be ſure not to over-pole them for length the firſt Year. Aſh and Alder-poles are reckoned the beſt; and if they have a ſmall Fork at the end, it will keep up the Hop the better. Diſperſe your Poles between the Hills before you begin to pole, and begin not to pole 'till your Hops appear above the Ground, that you may diſcern where the biggeſt Poles are required, and ſo you may continue poling 'till they are a Yard in height, or more; but ſtay not too long, leſt you hinder the growth of the Hop, which will not grow large unleſs it have a Pole or ſuch like to climb up on. Set the Poles near to the Hill, and in depth according to the height of the Pole, Nature of the Ground, and to its being expoſed to Wind, that the Pole may rather

ther break than riſe out of the Ground. Let the Poles lean outward one from another, that they may ſeem to ſtand at an equal diſtance at the top to prevent Houſling, as they call it; and let them lean towards the South, that the Sun may the better ſhine amongſt them: For 'tis evident that a leaning or bending Pole bears more Hops than an upright one. Always have ſome ſpare Poles in reſerve in caſe any Poles break or be over-burden'd, to ſupport them; for if they lie on the Ground they ſoon periſh. With a Rammer you may ram the Earth at the outſide of the Pole, for its better ſecurity againſt the Wind. If after ſome time of growing you find a Hop over or under poled, you may unwind it, and place another Pole in its place, or you may place another Pole near it, and bring the Hop from one Pole to another.

Tying of Hops.

When the Hops are got two or three Foot high, they are to be conducted to ſuch Poles as you think fit that are neareſt, and have feweſt Hops; wind them about the Poles according to the courſe of the Sun, to which they ſhould be gently bound with ſome wither'd Ruſhes or woollen Yarn: Two or three Strings are enough to a Pole. Be cautious of breaking the tender Shoots, which are more tender in a Morning than in the heat of the Day. During *April* and *May* Hops ſhould be conſtantly tended to guide them to their Poles, which may be done with a forked Stick, or a Ladder with a Stay to the back, where they are out of reach. About Midſummer, or a little after, the Hops begin to leave running at length, and to branch; ſuch as do not, it may be convenient to nip off the top, or to divert it from the Pole, that it may branch, which is much more for the benefit of the Hop than its running of its ſelf out at length.

Sometimes in *May*, after a Rain, pare off the Surface of the Earth with a Spade, Hoe, Breaſt-Plough, or a Plough with one Horſe, and with the

Parings raiſe your Hills high, and enlarge their breadth, burying and ſuppreſſing all ſuperfluous Shoots of Hops or Weeds; by which means you will keep the Weeds from impoveriſhing of your Hops, and keep your Hills moiſt. This Work may be continued throughout the Summer, eſpecially after Rain.

Watering of Hops. In a dry Spring, where Water is to be had, 'tis of great advantage to water them: The firſt watering is beſt to be done before you lay the Parings of the Garden upon the Hills: If the Summer prove dry, watering may be repeated three times; and after every watering make up the Hills with the Parings and with the Weeds to keep the Hops moiſt, for the more the Hop is ſhaded from the Sun, the better it thrives, as is evident by ſuch as grow under ſhelter, that are never dreſt, and yet may compare with thoſe that the moſt care is taken of.

Gathering of Hops. Towards the End of *July* Hops blow, about the Beginning of *Auguſt* they bell, and are ſometimes ripe, in forward Years, at the End of *Auguſt*, or Beginning of *September*. At ſuch time as the Hops begin to change colour, or that they are eaſily pulled to pieces, or that the Seeds begin to look brown, and ſmell fragrantly, you may conclude them ripe, and then procure what help you can for a quick gathering of them; for one windy Day or Night may othrewiſe do much miſchief.

The Manner of gathering Hops, is to take down four Hills ſtanding together in the midſt of the Garden, and to cut the Roots even with the Ground, and laying of the Ground level, they throw Water on it, and level and ſweep it, and ſo make a Floor of it on which they lay the Hops to be pick'd. On the outſide of this Floor the Pickers ſit, and pick them into Baſkets after the Vines are ſtrip'd from the Poles: The Floors they clean two or three times in a Day. Always in this way of picking 'tis neceſſary to have the Poles without Forks, otherwiſe

wiſe it will be troubleſome to part the Hop-Vines and the Poles.

But the beſt and moſt expeditious way, and which is moſt uſed, is to make a Frame with four ſhort Poles or Sticks laid on four Forks driven into the Ground, of ſuch a Bigneſs as to be covered with the Hair-cloth of your Kiln, or a Blanket tack'd about the Edges; on which Frame they lay the Poles with the Vines on them, either ſupported with Forks or the Edges of the Frames: The Pickers ſtanding on each ſide pick the Hops into the Hair-cloth or Blanket: When the Blanket or Hair-cloth is full, they untack it and carry it away, and empty it or put another in its room; which Frame may from time to time be eaſily removed from one place in the Garden to another, as they find occaſion: This way keeps the Hops clean, and ſaves a great many that otherwiſe are loſt by tumbling them about.

Before you draw your Poles, with a ſharp Hook fixed at the End of a long Pole, divide your Hops above where they grow together with other Poles; then ought you to cut the Hops about two or three Foot above, and not cloſe at the Hills, becauſe it occaſions the Hop to bleed too much of its Strength away, and weakens them very much. Then draw your Poles; but in caſe they are ſo faſt in the Ground that they cannot be raiſed without breaking, you muſt get a Pair of Tongs like a Smith's Tongs, only ſtronger, and toothed at the End; with theſe Tongs taking hold of the Pole, and reſting of the Joint thereof on a Block of Wood, you may weigh up the Poles without trouble; or, for cheapneſs ſake, you may have a wooden Lever forked at the Ends, into the ſides of which drive ſome Iron-teeth, which put to the Pole, and by the ſtrength of your Right-hand, whilſt you pull the Pole to you with your Left, you may raiſe it. Cut no more Hops, nor draw any more Poles, than you can conveniently diſpatch in an Hour or two in caſe the Weather be hot or likely to rain.

If your Hop-garden be large, it may be worth while to raiſe a Shed in the midſt of it to ſhelter the Pickers and the Hops from the Sun and Rain, and to lay Hops in over-night for the Pickers to pick next Morning before the Dew is off your other Hops. Let not your Hops be wet when you gather them; but if the Dew or Rain be on them, ſhake the Pole, and they will dry the ſooner. If your Hops be over-ripe, they will be apt to ſhed their Seed, wherein conſiſts the chief ſtrength of the Hops: Alſo they will not look ſo green, but ſomewhat brown, which much diminiſheth the Value of them: Yet ſome let them ſtand as long as they can, becauſe they waſte leſs in the drying; for four Pounds of undried Hops, thorough ripe, will make one of dry; and five Pounds of Hops ſcarcely ripe, yet in their prime, makes but one: So that they judge they get more in the thorough-ripe Hop by the Weight, than they loſe in the Colour.

There are alſo two Sorts of Hops, the green and the brown; the one yielding the beſt Colour by much when they are dry, and the other bearing a larger and a greater Quantity of Hops, which is to be preferred. In the picking keeping them as clean as you can from Leaves and Stalks, which will damage you more in the Sale than they will advantage you in the Weight.

As faſt as you pick your Hops, dry them, for their lying undried heats them, and changes their Colour: But if your Kiln be full, that you cannot do it preſently, ſpread them on ſome Floor, that they may not lie thick, and thus they will keep a day or two without damage, if you have a great Quantity; but if your Number be ſmall, and you have room to lay them very thin, if you take care to turn them often, you may this way dry a ſmall Quantity better than any other way. The well drying of Hops is the moſt neceſſary thing to be taken care of; for if that be not rightly done, they are not fit for the Market, nor for uſe: For a handful of ſlack-dried Hops will marr and ſpoil many Pounds by taking away their pleaſant Scent and Colour: Therefore let your Hops be throughly and evenly dried: Which to accompliſh, there are ſeveral ways uſed; as firſt,

The way uſed by the *Hollanders* and *Flemmings*, is to make a ſquare Room or Kiln about eight or ten Foot wide, according as you deſire it in Bigneſs, built up with Brick or Stone, with a door-place at one ſide: In the midſt of the Room, on the Floor, muſt the Fire-place be made, about thirteen Inches wide within, and thirteen Inches high in length, from the Mouth thereof almoſt to the back-part of the Kiln, leaving only a way for a Man to go round the End of it. It is uſually called a Horſe, as is commonly made in Malt-kilns, the Fire paſſing out at Holes on each-ſide, and at the End thereof; every Maſon or Brick-layer almoſt knowing how to make it. *Ooſt or Kiln.*

Above five Foot high is placed the Bed or Floor whereon the Hops lie to be dried, which muſt have a Wall about it four Foot high to keep the Hops up from falling. At the one ſide of the upper Bed muſt be made a Window to ſhove off the dried Hops down into the Room prepared for them. The Beds muſt be made of Laths or Rails ſawn very even, an Inch ſquare, and laid a quarter of an Inch aſunder, with a croſs beam to ſupport them in the middle, into which Beam the Laths are to be let in even with the top of it, which will keep the Laths even in their places. On this Bed, without any Ooſt-cloth, lay your Hops by Baſket-fulls, beginning at the one end, and ſo proceeding 'till all be covered over half a Yard thick without treading on them; then lay them even with a Rake or Stick, that they may not lie thicker in one place than another;

ther; and then make your Fire below of broken Poles, or other Wood, ſay ſome; but Charcoal is the only Fuel for Hops. You muſt keep your Fire at a conſtant Heat, and only at the Mouth of the Furnace; for the Air will diſperſe it ſufficiently. The Hops this way are not to be ſtirred until they are throughly dried, which is not until the Tops are dry as well as the Bottom; but if any place be not ſo dry as the reſt (which you may perceive by reaching over them with a ſtick or Wand, and touching of them in ſeveral places) obſerve where they rattle; and where not, abate them there, and diſpoſe of them where the places where firſt dry. When they are through dry (which is known by the Brittleneſs of the inner Stalk if rubbed and it break ſhort) then are they enough; at which time take out the Fire, and ſhove out the Hops at the Window for that purpoſe, with a Coal-rake made of a Board at the end of a Pole, into the Room made to receive them, and go in at the Door below, and ſweep together the Seeds and Hops, that fell through, and lay them with the other; and proceed to lay another Bed of green Hops as before, and renew the Fire.

Another way to dry Hops.

In ſeveral places they dry their Hops on the ordinary Malt-kilns on a Hair-cloth, laying of them about ſix Inches thick; and when they are almoſt dry, with a Scoop, made for that purpoſe they turn them upſide down, and let them lie again 'till every Hop, as near as they can be throughly dried: And then with the Hair-cloth remove them to the Heap; where they are to lie 'till they be bagged, Both theſe ways are ſubject to ſeveral Inconveniences. In the firſt way, the Hops lie ſo thick, and never turned, the Under-part of them muſt needs be dry before the Upper; and the Fire paſſing through the whole Bed to dry the uppermoſt Hops, muſt needs over-dry and much injure the greater part of the Hops both in ſtrength and weight, beſides the waſte of Firing, which muſt be long continued to thorough-dry ſo many together.

In the ſecond way, the turning of the Hops breaks them very much, by forcing of the Scoop amongſt them, the rough Hair-cloth frets and ſpoils many of the Hops, and ſhatters their Seed; elſe this way is rather to be preferred before the other.

Beſt way of drying Hops.

Which ſeveral Inconveniences may be prevented by making the Lower-part of the Kiln as before is deſcribed, and the Bed thereof made after the following manner. Firſt make a Bed of flat Ledges about an Inch thick, and two or three Inches broad ſaw'd, and laid a-croſs one another Chequer-wiſe the flat way, the Diſtance to be about three or four Inches; the Edges ſo entred the one into the other that the Floor may be even and ſmooth: This Bed may reſt on two or three Joiſts, ſet edge-wiſe to ſupport it from ſinking.

Then cover this Bed with large double Tin ſolder'd together at each Joint, and ſo order the Ledges before you lay them, that the Joints of the Tin may always lie over the middle of the Ledge; and when the Bed is wholly covered with Tin, fit Boards about the Edges of the Kiln to keep up the Hops; only let one ſide be to remove, that the Hops may be ſhoved off as before.

On this Tin-floor or Bed may the Hops be turned without ſuch hazard or loſs as before on the Hair, and with leſs expence of Fuel; alſo any manner of Fuel will ſerve for this purpoſe as well as Charcoal, the Smoak not paſſing through the Hops as in either of the other ways: But you muſt remember to make Conveyances for it at the ſeveral Corners and Sides of your Kiln. The ſaving of Fuel only, beſides the advantage your Hops receive, will of it ſelf, in a little time, recompence the extraordinary charge of a Tin-floor.

The turning of Hops, after the moſt facil and beſt way, is found to be not only a waſte and an injury to the Hops, but alſo an expence of Fuel and Time; becauſe they require as much Fuel and as long time to dry a ſmall part when they are turned, as if they were almoſt all to be dried; which may be prevented, in caſe the upper Bed whereon the Hops lie have a Cover, that may be let down and raiſed at pleaſure: Which cover may be tinned over, only by nailing of ſingle Tin-plates over the face of it, that when the Hops begin to dry, and are ready to turn, that is, that the greateſt part of the Moiſture is evaporated away; then may you let down the Cover within a Foot or leſs of the Hops, which (reverberatory-like) will reflect the heat upon them, that the uppermoſt Hop will ſoon be as dry as the lower, and every Hop equally dried. This is the moſt expeditious, ſure, and leaſt expenſive way of drying of Hops, and the coſtlieſt and troubleſomeſt part of the Work that belongs to them.

Bagging of Hops.

As ſoon as your Hops are off the Kiln, lay them in ſome Room three or four Weeks or more, that they may cool, give and toughen; for if they are immediately bagged, they will break to Powder; but if they lie a while (the longer the better, if they be cloſe covered from the Air with Blankets) you may bag them with the more ſecurity.

The Manner whereof is uſually thus: Make a hole round or ſquare in an upper Floor, big enough that a Man may with eaſe go up and down, and turn and wind in it: Then tack on a Hoop about the Mouth of the Bag faſt with Pack-thread, that it may bear the weight of the Hops when full, and of the Man that treads them; then let the Bag down through the Hole, and the Hoop will reſt above, and keep the Bag from ſliding wholly through, into which Bag caſt a few Hops, and before you go in to tread, tie at each lower Corner a handful of Hops with a piece of Pack-thread to make as it were a Toſſel by which you may conveniently lift or remove the Bag when full; then go into the Bag, and tread the Hops on every ſide, another ſtill caſting in as faſt as you require them, 'till it be full: When it is well trodden and filled, let down the Bag by unripping of the Hoop, and cloſe the Mouth of the Bag, filling of the two uppermoſt Corners as you did the two lower; which Bag, if well dried and well packed, you may keep in a dry place ſeveral Years; only you muſt have a care that the Mice do not ſpoil or deſtroy them; not that they will eat them, but make their Neſts in them.

In *Hampſhire* They ſell Water-Trefoil as dear as Hops, and ſay that it doth upon all accounts as well, and that an eighth part of the Quantity of it as of Hops will do. 'Tis a very wholſome Herb, and eſteemed very good for the Scurvy.

After you have laid by your Hops, you may return again to the Hop-garden to take care of your Poles for another Year. Strip off the Hawm firſt from them, and ſet up three Poles (like unto a Triangle wherewith they uſually weigh heavy Ware) ſpreading at the Bottom, and bound together near the Top, about which you may ſet as many of your Poles as your pleaſe; bind them about with a little Hawm twiſted to keep them together: By this means the outward Poles are only ſubject to the Injuries of the Weather, keeping all the inner Poles dry, except only at the Tops: And therefore ſome lay them on Heaps, and cover them with Hawm: But the beſt way is, to houſe them in your Shed, which may ſerve to preſerve them in, and to gather your Hops into.

In Winter, when little elſe can be done to the Hop-garden, you may then provide your Soil, and Manure againſt the Spring. If the Dung you carry in be rotten, mix it with two or three parts of common Earth, and ſo let it lie well mixed 'till you have occaſion to make up your Hills. But if your Dung be new, then let it lie mixed 'till another Year; for new Dung is very injurious to Hops. *Manure.*

Horſe-dung or Cow-dung is very good; but no Dung can compare with Pigeons-dung, a little whereof laid to a Hill, and mixed that it may not be too hot in a place, is of great advantage. Sheeps-dung is alſo very good. And if in Spring or Summer-time you ſteep Sheeps-dung, Pigeons-dung, or Hens-dung, in Water, 'till it be quite diſſolved: and if when you water your Hops, on the Top of every Hill, in the hollow place made to contain Water, you put a Diſh-full of this diſſolved Dung, it will prove a moſt expeditious way, and the leaſt expenſive of any, to enrich your Hop-hills. Alſo by this means you may convey to the Roots of Hops, or any other Plants, the fixed Salt of Urine, of Lime, Aſhes, or any other fertilizing Subject whatſoever.

Chap. XXI. *Of French Furze.*

THey make very great Improvement of their ſandy, gravelly Land in *Devonſhire* and *Cornwal*, where Fuel is very ſcarce, by ſowing of them with *French Furze* Seed, which they reckon a great Improver of their Land, and a Fitter of it for Corn. Upon ſome Lands they will grow to be fourteen or fifteen Foot high, and afford very great Quantities of Fuel. But I muſt refer a more particular Account of this to the Appendix.

Chap. XX. *Of Carrots.*

CArrots, tho' Garden-Roots, yet they do well in the Fields for Seed, tho' the Land for them ſhould rather be digged than plowed; but if it is plowed, it ſhould be very deep, becauſe they extend their Root much downward. They delight in a deep, rich, warm, black Garden-Mould, rather inclining to Sand than Clay.

The time of ſowing them is about the beginning or middle of *March*. They ſhould be well covered and hoed, 'till they get above the Weeds. The Roots are good for Hogs and Geeſe; but the beſt Profit of them is the Seed, which near great Cities ſells for a great Price. At *London* it commonly yields from five Pounds to ten or twelve Pounds *per* Hundred.

I heard of a Man in *Eſſex* that had an old Orchard of about an Acre of Ground that was a very rich Mould; he ſtubbed up all the Trees, and dug it up, and ſowed it with Carrots, which he let run to Seed, and had of it ten hundred Weight, which he ſold that Year for ten Pound *per* hundred.

Chap. XXIII. *Of Teaſils.*

IN ſome Parts of *Eſſex* they ſow their Lands with *Teaſils* to dreſs their Bays and Cloth with; which they do upon Lands already plowed up for Corn: And about *December* they either double furrow it, that is, have one Plough to follow the other in the ſame Furrow, or dig it up; and the latter End of *February*, or the Beginning of *March* they ſow the Teaſil-ſeed, which they keep well weeded in Spring. One Peck will ſow an Acre. They eſteem a Clay-ground the beſt Soil for them. They cut them about *Auguſt*, tying them up in Bundles, or Staves, as they call it, and ſet them to dry in the Sun if the Weather be fair; but if not, they ſet them in Rooms and dry them there. The common Produce is about an hundred and ſixty Bundles or Staves upon an Acre, which they ſell for about one Shilling a Stave. But the moſt common way of propagating them is, to ſow them mixed with Caraway and Coriander-ſeed, of which there is a great deal ſown about *Kelvedon*, *Coggeſhall*, and other places in *Eſſex*.

Chap. XXIV. *Of Caraway and Coriander-Seed.*

C*Araway-ſeed* delights in a dry Mould ſomething inclining to Clay, or rich Garden-Mould, which they ſow about the latter End of *February*, or beginning of *March*. Eight pounds will ſow an Acre, with which they commonly mix eight pounds of Coriander-ſeed, and ſometimes about half a Peck of Teaſils, both which yield their Crop the firſt Year; whereas the Caraway-ſeed is the ſecond Year before 'tis fit to cut, but then it will laſt three or four Years, for which they order the Ground as for Teaſils, and keep the Land hoed twice a Year, once in Spring, and in *Auguſt*, which coſts them ten or twelve Shillings an Acre to do.

Chap. XXV. *Of Aniſeed.*

A*Niſe* may be propagated in *England* if ſown in *February*, for which the Ground ſhould be prepared about *Michaelmas*, and ſome new Horſe-dung ſtrewed upon it to preſerve it from the Froſt. They will be ripe about *Bartholomew-tide*, when they may be ſown again for next Year. It is beſt to renew them every two Years. The Leaves hereof are uſed in Sallet, and have a very pleaſant Taſte; but they muſt not be too much, nor too frequently, uſed with hot Food, but with Fiſh they may ſecurely, and the bad Qualities thereof may be allay'd by mixing Parſly, Bete, and Burrage or Lettice therewith. They alſo may be ſown for good Profit for Merchandice.

BOOK VI.

Chap. I. *Of ſeveral Sorts of Beaſts, Fowls, and Inſects, for the Stocking of Land.*

AS the Farm is of little uſe unleſs it be ſtocked with Beaſts, or other Animals, that may be employed in the Labour and Work of it, and for the Supply of the Market and Kitchen: So the Farmer is to conſider what will turn to the beſt Advantage, and what is moſt proper and ſuitable to his Land, for the Uſes he intends to employ it for, and the Coſt and charges of ſuch a Stock; that ſo he may ſuit his Undertaking to his Purſe. The common reckoning for ſtocking of a Farm is three Years Rent; as, that three hundred Pounds will ſtock a Farm of one hundred Pounds *per Ann.* which is commonly near about what is ſufficient, except in very dear Years Concerning which ſort of uſeful Stock, I ſhall begin with the *Horſe*, as one of the moſt noble, ſtrongeſt, ſwifteſt, and moſt neceſſary of all the Beaſt uſed in a Farm.

Chap. II. *Of Horſes and Mares.*

WHere you have good ſtore of Paſture, either in ſeveral or common, or in Woods or Groves; it's no ſmall Advantage to keep a Team of Mares for Breed: But where there is moſt Arable, and little Paſture-Land, Stone-Horſes or Geldings, are more neceſſary, as may be obſerved in ſeveral Counties of that ſort. In *Hertfordſhire* they make great Advantage by buying of Colts out of *Leiceſterſhire*, of between two and three Years old, which at about ſix Years old they ſell to Gentlemen at *London* for their Coaches. Theſe Colts improve much in their Stature, and their Work pays for their keeping; which makes it a double Advantage to them, and gives the Farmer opportunity of bringing them up to be fit for buſineſs.

If you deſign to have beautiful ſtrong Colts, let your Stallion and Mare be ſo, eſpecially your Mares; for the Form and Shape of the Foal is moſt commonly more like to the Mare than the Horſe, and more particularly for the Head and Neck, which is the beautiful part of the Horſe: Let both the Stallion and Mare be of lively, briſk Natures; for heavy, dull Breeders will always produce lumpiſh, heavy Colts: And ſee that they be of healthy ſound Conſtitutions; for your Colts will for the moſt part have the ſame Diſtempers with the Stallions and Mares: And if you deſire to have large Colts, be ſure to have large-bellied Mares, that the Colts may have room to grow in, and give them good keeping, and then you need not fear their Size, let the Stallion be of what Stature he will.

Make your Mares as tame as you can: It's better to keep them to gentle, eaſie Work, ſuch as plowing an hour or two in a day, *&c.* than to have them wild; for by being acquainted with their Keeper, and being ſoberly handled, you may with eaſe remove them from one Paſture to another, bring them to be covered, and to take their Colts from them: Whereas wild Mares are not only troubleſome, but often deſtroy their Colts in their Bellies, by their wild leaping of Ditches and Hedges, *&c.* And the ſame care ought to be taken with Colts to make them tame, who are often apt elſe to do themſelves a miſchief, whenever you have occaſion to do any thing with them.

The ſureſt way of having your Mares breed, and the moſt profitable for the Farmer, except he keeps his Stallion to let out to hire, is to have a place well fenced, that is good Land to keep your Horſe in, and to let your Mares go with your Horſe during the Months of *April* and *May:* But your Horſe this way will not ſerve ſo many Mares as if houſed, nor be ſo fit for conſtant working the other ten Months of the Year: And therefore if you work him hard, and let him out to horſe more Mares than your own, you muſt take him into the Stable, and feed him well; and if the Horſe is kept in the Stable, it is reckoned beſt to take the Mare in too for about a Month or ſix Weeks, and that ſhe be fed well with Hay and Oats, and that about five or ſix days before you bring her to the Horſe, you let her blood on both ſides of the Neck, taking about a quart of Blood out of each Vein.

As to the Manner of covering of the Mares, they have in the breeding Countries, in the houſe where they keep Stallions on purpoſe to let out to horſe Mares, a ſquare hole with a door to it, big enough for the Horſe to put his Head and Neck out at; to which hole they bring the Mare for the Horſe to ſmell on, by which means they can ſee whether the Mare will ſtand to the Horſe or not, without any danger of the Mare's ſtriking the Horſe, or his doing of himſelf any injury. If they find the Mare willing to ſtand, they have her out into ſome broad place, where they lead the Stallion out to her; and if he be unlucky and mad, with two Men to lead him, and let him horſe her: They reckon in the Morning faſting, or in the Evening, the beſt times of the Day; eſpecially the Morning, and that the Horſe be well provender'd, and drink but little over Night. When the Stallion is diſmounted, they commonly throw a Pail of cold Water on the Mare, which they think makes her ſtand the better to her horſing.

After ſhe is covered, they that are very exact in taking care of them, keep them to the ſame Diet as before for three Weeks or a Month, and without Work, and about *September* they take their Mares into the Houſe again, where they keep them 'till they foal; at which time they feed them with Maſhes and other moiſt Food 'till Graſs comes to be plenty: Which are Niceties the Farmer ſeldom troubles himſelf about. If after they have foaled they keep them a Night or two in the Stable, and give them the beſt Hay, Graſs and Oats that they have, they think it ſufficient.

The beſt Age to breed at, is when the Mares are from four to twelve Years old, and much longer if the Mares have only been kept to breed on, and not wrought; and the Horſe from five to fourteen Years old. I ſhall not mention any thing of the time of the Moon, nor about the ſeveral ways mentioned for the procuring of Horſe or Mare Foals; becauſe I could never find them effectual, or any ways ſignificant.

Let your breeding Mares, fourteen or fifteen days before their foaling, be well kept, which will not only make her have plenty of Milk, but cauſe her quickly to take horſe again: The beſt time for which is about twenty days after her foaling.

The beſt times for the weaning of Colts is at *Candlemas* or *Shrove-tide*: In this reſpect you muſt be very careful; for if your Colts be not well weaned, well ſummered and wintered, eſpecially for the firſt three Years, they will ſeldom prove either good or large: Be ſure, for the firſt Summer, to keep them out of the hearing of the Dam.

When the Colts are about two Years old, it is the beſt time to take them up, and to make them tame; and the Year following, when they are three Years old, back them that are to be for the Saddle, only they muſt be uſed kindly at that Age. The firſt Year Saddle-Colts ſhould only be walked, and the ſecond but ſeldom trotted, and that but for a little way: But we cannot in *England* get upon a young Horſe's Back without ſpoling of him: And for thoſe Horſes that are for Draughts, I never knew any good Drawers, and gentle, that were broke after that Age; nor can I think but that eaſie, gentle Work is good for young Horſes, to uſe them to it by degrees: But I would not have a Draught-Horſe, that I were deſirous of being very curious about, wrought above one hour, nor a Saddle-Horſe gallopped, nor rid above ten Miles in a Day, 'till they are ſeven Years old.

If your Colts be any ways unruly or wild at the firſt coming into the Houſe, let them have no Meat but what they take out of their Keeper's hand; by which means you will make them gentle without any Violence: If that will not do, keep them waking, and want of Sleep will cure the wildeſt Horſe that is. But to prevent his being ſo, uſe him from his Foaling to be fed in Winter at hand in the Houſe; and for ſome time when you back him firſt, never ride him but with a Horſe before him, and always in the Company of as many Horſes as you can.

Whoever will keep his Horſe bridled and ſaddled ſome time after his riding of a Journey, and let him champ on the Bit 'till he is in good temper, and takes not off his Saddle 'till he is cold, and then rubs the Saddle-place well, and doth not give him Water when hot, nor ride him hard at firſt ſetting out when he is full, and that takes care to ride him ſoftly for the laſt Mile or two before he comes to his Journeys end, will be ſure not to have either a ſick or lame Horſe.

But the moſt occaſion that Farmers have being for Draught-Horſes, I ſhall recommend to them the Choice of ſuch as are ſtrong, well limbed, and as near as can be, ſuch as are of a height; for Horſes in a Draught unequally ſuted, never draw at eaſe: And if they are well wrought, let them be well kept, and then you may expect buſineſs from them. A good Team of Horſes cannot well have a leſs Allowance than forty Quarters of Oats in a Year,

beſides

beſides good Hay and good Graſs when they are out of the Houſe. It will likewiſe be neceſſary that the Farmer ſuit his Horſes to his Ground as well as his other Cattle; ſo that where his Land is rich he have the larger, and where barren the ſmaller Sort of Horſes, except he keep Stone-Horſes, and keep them always at Hay and Oats.

Fifty Acres of Fallow-Land, is as much work as can well be managed by a Team of five Horſes; if it is ſtiff Land, they muſt be very ſtout Horſes, or that Quantity will be too much for them.

There are ſeveral Epidemical Diſtempers deſtructive to the Farmer's Stock: And though there are many Pretenders to the Art of Farriering and Cow-leeching, yet many of them are very ignorant, eſpecially in the Countries, the Books that are writ upon that Subject being chiefly Collections from others, , with a very ſmall Number of experienced Receipts amongſt them, ſo that but few can tell, out of ſo great a Number, which to chuſe, unleſs they had opportunities of trying all of them, which would be a very expenſive way of Knowledge to the Farmer. I have thought it might be of uſe to publiſh ſome Receipts that I have had the Experience of my ſelf, or have from them that have experienced them, which I think I can depend upon, becauſe they have not been ſuch as have had any Advantage by it: Which, though they are but a ſmall Number, yet if by the communicating of them I can, for the publick Good, perſwade others that have any experienced Receipts to communicate them to, and to ſend them to the Publiſher hereof, that they may be inſerted in my *Appendix*; it will, I think, be a Work that will be of great Advantage not only to the Farmer, but even to the Profeſſors and Practiſers of theſe Arts too: And therefore I ſhall begin with ſome Obſervations concerning the Purging of Horſes; in doing of which, I ſhall conſider two things: Firſt, the Doſes, which are to be proportioned according to the Size and Strength of the Horſe; and ſecondly, give ſome Directions for the ordering of a Horſe, when he takes a Purge.

§. 1. *Of Purging a Horſe.*

Take Horſe-Aloes beaten to fine Powder, one Ounce two Ounces of freſh Butter; and add a ſmall Quantity of Powder of Aniſeeds, for a Horſe of thirteen Hands high.

Take Aloes one Ounce and a quarter, if a great feeding Horſe; if not, one Ounce and half a quarter, with three Ounces of Butter, and two Ounces of Aniſeeds, for a Horſe of fourteen Hands high.

Take Aloes one Ounce and a half if a great Feeder; if not an Ounce and a quarter, and half a quarter, and ſomething better: Then two Ounces of Powder of Aniſeeds, with the ſame Quantity of Butter, for a Horſe of fifteen Hands high.

Make theſe ſeveral Quantities into Balls of about the Bigneſs of a ſmall Waſh-ball; and after you have given two of them, give the Horſe a Horn-full of ſtrong or ſmall Beer, and another Horn-full after you have given the reſt of the Balls, which ſhould be anointed with a little Butter.

The day before you purge your Horſe give him warm Water with Bran in it, and the next Morning faſting give him the Purge: Ride him a quarter of an Hour, bring him in, and let him ſtand two Hours without eating; then give him ſome Hay, and an Hour after, water him with warm Water; and an Hour after that give him ſcalded Bran: Do the ſame at Night, and next Morning: If he purges, ride him out a little; and then bring him in, and give him ſcalded Bran; a while after water, and ride him out again while he purges; then bring him in and give him ſcalded Bran; a while after water, and ride him out again while he purges; then bring him in, and give him ſcalded

Bran. Thus you may make it work more or leſs as you pleaſe, by repeating the giving of him Water and Riding. Over-night give him very little Hay; for it is beſt taking any Phyſick on an empty Stomach.

Note, that if your Horſe is newly taken up from Graſs, great care muſt be taken of him, and he muſt ſtand in the Houſe at leaſt a Week or ten Days before you purge him; and be ſure give ſuch a Horſe ſcalded Bran, as is before directed. I have known ſeveral Horſes killed for want of obſerving this Rule.

§. 2. *Another Purge.*

Take Aloes Succotrinæ an Ounce, Treacle an Ounce, Venice Turpentine an Ounce, Sena beaten an Ounce, Honey half a Pound: Mingle theſe together in a Pint of White-wine or Sack, and give it lukewarm for a Horſe of fourteen Hands.

§. 3. *Another Purge.*

Take Aloes an Ounce, Jalap, Cream of Tartar, and Sena, of each a Drachm and a half, if the Horſe be fourteen Hands, (if fifteen Hands, add half a Drachm more of each) of Aniſeeds half an Ounce: Make it up with a little Butter into Balls as big as a Wallnut.

§. 4. *To Purge Greaſe, for a middle-ſized Horſe.* [†]

Take freſh Butter four Ounces, Caſtile Soap two Ounces, Hempſeed in Powder two Spoonfuls, Sugar-candy an Ounce: Make it into Balls and give it, riding him after it; and let him have his Water warm'd the firſt time you water him.

§. 5. *If a Purge work too much, how to ſtop it.*

Take Bole-Armoniack two Ounces, a bit of Whiting as big as a Pullet's Egg; beat it fine, and boil it in three Pints of Beer, with two or three Slices of brown Bread in it, and ſweeten it with Sugar.

The beſt time to bleed, if you deſign purging of a Horſe, is about ten Days after his Purging.

§. 6. *For a foundred Horſe.*

Take an Egg, break it, and put it into a Horſe's Foot, and keep it in by Putting a Piece of Leather over it, which you may faſten with Splints put croſs under the Shooe: Let him ſtand ſo all Night, or twenty four Hours, and it will for a Day or two, as I am told from very good Hands, make him go eaſie, and take away the Pain.

For *Surbating*, which is the beating of the Horſes Hoof againſt the Ground; uſe the ſame Medicine as above, or ſome freſh Butter.

§. 7. *For Coughs or Colds.*

Take a Quart of Ale, half an Ounce of Diapente, half an Ounce of Bay-berries bruiſed ſmall, Grains of Paradiſe pounded an Ounce, Horſe-ſpice two Ounces; let it boil, and no more, adding to it two Spoonfuls of Sallet-oil, and two of Honey.

When you give any of theſe opening Drinks, give it to the Horſe in the Morning faſting, and ride him half an Hour after it, and tye him up three Hours to the Rack; after which give him a Maſh and warm Water at Night, and next Day in the Morning. If he goes to Graſs, take him up a Night or two-before-hand, and let him ſtand in two Nights after the taking of it; and when you turn him out, let it be in a warm Day, taking of him up two or three Nights more.

§. 8. *For an ordinary Cold.*

Take a ſmall Piece of Rag dipt in Tar mix'd with a little Honey, and tye it about his Bit; ride him upon it, and ſet him up warm.

§. 9. *For a Graſs-Cold.*

Take up your Horſe early in the Morning, give him a Pint of Ale lukewarm; diſſolve in it half an Ounce of the Juice of Liquorice, ride him half an Hour ſoftly, ſo as not to heat him at all, and turn him out preſently.

§. 10. *Balls for a Cold, Conſumption, or any inward Diſtemper.*

Take Wheat-meal ſix Pounds, Aniſeeds two Ounces, Cummin-ſeeds ſix Drachms, Carthamus one Drachm and a half, Fenugreek-ſeeds one Ounce and two Drachms, Brimſtone one Ounce and a half, Liquorice ſix Ounces, Elecampane three Ounces, Bay-berries and Juniper-berries of each an Ounce and a half, Sallet-oil one Pint, Honey one Pint and half, the Yolks of ſix Eggs, White-wine four Pints: All being finely powder'd, make them into Paſte, of which make Balls as Big as a Man's Fiſt, and give the Horſe a Ball diſſolved in his Water, Morning and Evening, for fifteen Days together: If he refuſe it at firſt, he will quickly deſire it if kept to it.

§. 11. *Of the Plague, Gargle, or Murrain in a Horſe.*

The Murrain is principally cauſed from a hot, dry Seaſon of the Year, or rather from ſome general Putrefaction of the Air, or from the Infection of other Cattle, from Cattle ſmelling to Carrion, and licking of the Bones; from foul Food, as overflown Hay, Graſs rotted by the long ſtanding of Water on it in wet Summers; which Sort of Food is much better to rot on the Ground than to be made uſe of. All theſe things beget an inflammation in the Blood, and cauſe a ſwelling in the Throat, which in little time ſuffocateth the Cattle.

The Signs of this Diſeaſe are, a hanging down of the Head, Gum at the Eyes as big as your Finger, going weakly, ſtaggering, the Head ſwelling very big, the Breath ſhort, the Heart beating, with rattling in the Throat: And if you put your Hand into his Mouth, and find his Breath very hot, his Tongue ſhining, he hath the Diſtemper very ſtrong. If he be taken backward, he will be very ſtiff, and his Guts rumble very much.

If any of your Cattle are infected, ſpeedily let both ſick and well Blood, and drench them. The following Receipt I have not had opportunity to try, but it hath been much recommended to me.

Take Diapente a Quarter of an Ounce, Dialthæa, London Treacle, Mithridate, and Rhubard, of each the Quantity of a Nut; of Saffron a ſmall Quantity, Wormwood, red Sage, of each an handful, and two Cloves of Garlick: Boil all together in two Pints of Beer, 'till it comes to a Pint and a half; give it lukewarm, when he is faſting: Keep him very warm, and give him a Maſh of Ground-Malt; let him drink warm Water for a Week, and ſometimes have boiled Oats. If you can make him ſweat he will do well: If one Drink will not do, give him another three Days after. Half the Proportion will do for a Cow.

§. 12. *For the Colick, Belly-ach, or Gripes.*

This proceeds from a fretting, gnawing or ſwelling of the Belly, occaſioned from windy Humours, or from eating of green Corn, or Pulſe.

It is known by a Horſe's ſtretching his Neck, Legs, or Belly, by his lying down and riſing often, ſtamping with his Feet: He will rather look full than empty: And if he is cold in the Mouth, he is in great danger.

Take half a Pint of White-wine, warm it, and put to it ſix Ounces of Oil, and fifty Drops of Spirit of Harts-horn; give it the Horſe: But if he is full of Blood, let him blood firſt. If the ſaid Doſe will not do, give him another; into which you may put a hundred Drops of the Spirit of Harts-horn.

Take Aqua-vitæ four Ounces, two Nutmegs grated, Saffron two Drachms, Sallet-oil ſix Spoonfuls; give it the Horſe, ride him after it, and ſet him up warm.

§. 13. *For Greaſe and ſwollen Heels.*

If your Horſe's Legs ſwell in the Stable, give him ſome Powder of Brimſtone in his Oats, and it will make his Coat lie fine, and do him good for Heels: But if his Legs ſwell much, uſe the following Receipt.

Take Soap and Hog's Lard, of each a like Quantity; boil it, and put ſome Turpentine into it a little before it comes off the Fire: Cut away the Hair, and ſpread a Plaiſter on Flax, apply it twice a Day, 'till it runs very much, and give him the Purge at Page 150, where you will find this Mark [†]. You may likewiſe rowel him in the Cheſt.

§. 14. *For the Staggers or Stavers.*

The Staggers is a Giddineſs in a Horſe's Brain which turns to Madneſs. It is cauſed ſometimes by corrupt Blood or groſs tough Humours oppreſſing the Brain: And ſometimes by turning of a Horſe out to graſs before he is cold, and by hard Labour. The Signs of it are Dimneſs of Sight, Reeling, and Staggering of the Horſe, who for very pain will beat his Head againſt the Wall, and thruſt it into his Litter, forſake his Meat, and have wateriſh Eyes.

Firſt let him Blood in his hinder Parts, to draw the Blood from his Head; and about the middle of his Forehead cut a ſlit thro' the Skin about half an Inch long; upon this clap a Plaiſter of Pitch: If it run, the Horſe will do well again: if not, he will die. Before you lay on the Plaiſter, take a bit of the middle-part of a Dock-root, and thruſt into the hole of the ſlit, between the Skin and the Bone, up the upper-part of the ſlit, and lay the Plaſter on it, which renew as you ſee occaſion.

§. 15. *For a Mallender.*

Take Bay-ſalt, Gun-powder and Hog's Lard, mix it together, and anoint the place once in two or three Days; you may add a Pennyworth of *Unguentum Apoſtolorum* to it.

§. 16. *For Sore-Eyes.*

Where a Skin is growing over the Eyes, take an Egg, break off the top, take out the Yolk, and to the White add a little fine powdered Salt, and ſet the Egg on the Fire, 'till it come to a Powder, which mix with a little Honey, and put it into the Horſe's Eye with a Feather: But if you find it not ſharp enough to eat off the Skin; then blow the Powder alone in with a Quill.

Hobgoblin's Claws ſcraped to Powder, and put into a Quill, and blown into a Man's, Horſe's, or Beaſt's Eye, is an extraordinary thing. You may have it at moſt Apothecaries in *London.*

If a great Rheum follow the Eye, lay round it the defenſative Plaiſter, which may be had at any Apothecary's. It's good to drive Humours from any Wound.

§. 17. *For a blow on the Eye.*

Take ſome Honey, and add a ſmall Quantity of Powder of Ginger unto it, and put it into the Horſe's Eye, or take ſome Hog's Lard, Oil of Roſes, Oil of Elder, of each a like Quantity, melt it together, and anoint the Horſe's Eye with it.

§. 18. *To draw out a Thorn.*

Take two Whites of Eggs, add to them ſome Wheat-flower and Vinegar, and tie it on with a Cloth.

§. 19. *To prevent a Mare's ſlinking her Foal.*

Be ſure to take care of her in ſnowy Weather, and keep her where ſhe may have good Spring-

Water to drink, and not drink the melted Snow; which is very prejudicial to her.

§. 20. *For Gravel, or a Nail run into a Horſe's Foot.*

Search it ſo as to lay it open, and pour into it Tallow boiling hot.

Chap. III. *Of Aſſes.*

THE *Aſs*, tho' a contemptible Creature, is very ſerviceable to many that are not able to buy or keep a Horſe; eſpecially where they live near to any Heaths or Commons, the barrenneſt of which will keep him, he being contented with any traſh; as dry Leaves, Stalks, Thiſtles, Bryers, Chaff, and any Sort of Straw is excellent Food for him; he needs very little looking to, and will ſuſtain Labour, Hunger and Thirſt, beyond moſt Creatures, and is ſeldom or never ſick; and of all other Cattle he endureth the longeſt. They may be made uſe of to plow light Lands, to carry burdens, to draw in Mills, for which they are very excellent, to fetch Water, or any other odd things. They are very uſeful for their Milk, which is an excellent reſtorative in Conſumptions and other Weakneſſes: But they would be of much more Advantage, were they uſed, as they are in foreign Parts, for the breeding of Mules, as I ſhall ſhew in the next Chapter.

The She-Aſs, when you have any regard to their breed, ſhould be cover'd between the Months of *March* and *June*. The beſt Age to breed on them, is from three Years old to ten, and you ſhould let the young Aſs ſuck two Years, and not work them 'till they are three Years old.

Thoſe are reckoned the beſt ſhaped that are well ſquared, have large Eyes, wide Noſtrils, long Necks, broad Breaſts, high Shoulders, a great Back, ſhort

Tail, the Hair ſleek, and of a blackiſh Colour; their Skins make the moſt durable Shooes of any Sort of Leather whatever.

But I ſuppoſe the great Impediments of the keeping them, are the Injuries that they do to Trees, which they are very miſchievous to; and their ſlowneſs; but that hath a Conveniency in it, in that it is what makes them able to endure ſo great Labour and Hardſhip.

Chap. IV. *Of Mules.*

MUles are chiefly uſed in the rocky Countries, where are ſtony and rocky Ways, as on the *Alps*, the *Pyrenean* Mountains, &c. where great Numbers of them are kept; ſo as that upon the Roads, you may ſee forty or fifty of them together, moſt of them coal-black, that are very finely ſhap'd, and very large, being bred of the fine *Spaniſh* Mares, which are ſome of the handſomeſt Sorts of Mares that are; and the Mules are as fine, many of them being ſixteen or ſeventeen Hands high, and valu'd at forty or fifty Pounds a piece: They are the beſt Sort of Creatures that are for Burden and Sure-footedneſs, eſpecially in ſtony ways; and are excellent for draught, and the greatneſs of their ſtrength: An Inſtance of which I ſaw in one that my Father had which was bred in *England*, that was for ſhape a very thick ſhort one, and for height about fourteen Hands and an half: This Mule being put in the Fill of a Cart, at the bottom of which was ſlung a very great Piece of Timber, ſo big, that becauſe it was to be drawn up a ſteep Hill, the Carters and ſome other Countrymen preſent, concluded that the Mule and four Stone-horſes more could not draw it up; and while they were buſie about the tying of it, and doing ſome other things to the Cart, they not minding to hold the Mule, or to take any care of him, he alone run away with the Cart, and Timber, half way up the ſteepeſt Part of the Hill, before they could ſtop him: ~~And I~~ ſaw in *London* two Mules that were Sumpter-Mules to a Colonel in *Flanders*, bred there of the large *Flanders* Mares; one of them was ſixteen Hands and an half high, and the other ſeventeen, and an half, and they were as big ſet as any of the Dray or Cart-horſes uſed in *London*: And ſeveral of the Soldiers did affirm, that they had travelled for ſeveral Months together with eight hundred Weight a piece on their Backs. Which makes me wonder that they are not more minded in *England*, than they are; eſpecially conſidering their Hardineſs, and freeneſs from Diſtempers, and the length of their Lives, which is almoſt double to that of Horſes. In which particular thoſe bred in the cold Countries far exceed them that are bred in the hot; they go eaſier, and are much better to ride than Horſes for their Walk and Trot; but they are commonly rough Gallopers, tho' ſome of them are very fleet that are long made: Their ſhape for nimbleneſs, ſtrength, and bigneſs being much according to the Proportion of the Mare you bred them on, and ſo they may be ſuited for what uſe you deſign them. The greateſt Inconvenience that attends them is, that many of them are apt to kick and be ſtomachful: But it is commonly the not taking due care of them while they are young: They being of little value amongſt us, makes People neglect them; elſe thoſe bred beyond Sea, are as gentle as either Horſes or Mares.

Mules are of two Sorts; the one between the Horſe and the She-Aſs, and the other between the He-Aſs and the Mare: The firſt ſort are commonly very dull, and partake too much of the Aſs, and are not ſo large: And therefore the latter Sort are much more uſed and propagated. For this Sort of Breed you muſt take care to get one of the largeſt and fineſt He-Aſſes you can procure. In *Spain* they are ſo curious in their Breed of Mules, as to give fifty or ſixty Pounds for a well-ſhaped, large He-Aſs, only to make a Stallion of, and Breed of the fineſt, largeſt Mares they have, which they do by giving to the Aſs the Advantage of the higher Ground, and by putting of the Mare into a narrow Pit railed on each ſide: And tho' the Mules are of both Sorts, yet being a mixed kind, they never breed, tho ſome Authors affirm, that there are a Sort in *Syria* that procreate of their own kind.

If the Aſs, you deſign to breed on, be ſuckled with a Mare, or the Mare ſuckled with an Aſs, it makes them the more familiar, and the better acquainted with each kind; which you may bring either of them to do by taking of the Colt that belongs to the Dam away from her, and by putting of the other Colt to her in the dark for ten Days or a Fortnights time.

Chap. V. *Of the Bull, Cow, Calf, and Ox.*

BUlls and *Cows* are very ſerviceable to the Huſbandman for Work, and for the ſupply of the Family and Market. The beſt breed is reckon'd that of *Yorkſhire*, *Derbyſhire*, *Lancaſhire*, *Staffordſhire*, &c. and a good hardy Sort for fatting on barren or midling Sort of Land are your *Angleſeys* and *Welch*. The hardieſt are the *Scotch*; but the beſt Sort of Cows for the Pail, only they are tender and need very good keeping, are the long legged, ſhort horn'd Cow of the *Dutch*-breed, which is to be had in ſome places of *Lincolnſhire*, but moſt uſed in *Kent*; many of theſe Cows will give two Gallons of Milk at a Meal: But in furniſhing of your ſelf with Cattle, you ought to conſider the Goodneſs of your Land, and the Uſe you deſign your Cattle for, as whether for Breed, Milk or Work.

If for Breed, the better your Land is, the larger may your Kine be; and the cheaper, the more will be your profit: Only obſerve, that of what Kind ſoever your Breed is, that it be the beſt of the Sort, and let your Bull be of the ſame Country with your Cow, for they reckon a mixed Breed not ſo good.

For the ſhape of your *Bull*, he ſhould be one of a ſharp quick Countenance, his Forehead broad and curled, his Eyes black and large, his Horns long, his Neck fleſhy, his Belly long and large, his Hair ſmooth like Velvet, his Breaſt big, his Back ſtraight and flat, his Buttocks ſquare, his Thighs round, his Legs ſtraight, and his Joints ſhort; this Sort of Bull is the beſt for Breed, and makes the beſt Oxen for draught.

The *Cow* ought to have a broad Forehead, black Eyes, great clean Horns, her Neck long and thin, a large deep Belly, thick thighs, round Legs, ſhort Joints, a white large deep Udder, having four Teats, and her Feet large. As for the ſize of your Cows, as of all other Cattle, it muſt be ſuited to the Goodneſs of your Land, tho' the largeſt commonly give the moſt Milk: And whether you deſign them for Breed, Fatting or Milk; let them be ſuch as come off a worſe Ground than your own as near as you can.

The Uſe of the Cow is either for the Dairy or Breed: The red Cow is reckoned to give the beſt Milk, and the black to bring the beſt Calves; but the Cow that giveth Milk longeſt, is eſteemed the beſt, both for profit and breeding; and for them to Calve in *March* or *April* is the beſt time for the Dairy.

I ſhall not mention any thing about the making of Butter and Cheeſe, becauſe moſt good Houſewives are acquainted with the way of doing it; only as ſome Lands will make unſound Cheeſe, notwithſtanding all the care the good Houſe-wife can take. I ſhall here propoſe a remedy or two for that Inconveniency; which is, if you find any of your Cheeſe begin to be rotten, to cut it out, and ſcrape ſome Chalk into the hole ſo as to fill it up; and to keep the Chalk from dropping out, ſpread ſome Butter over it, and it will prevent its going farther, by drying up the Moiſture that cauſes it to corrupt: And to prevent the Mites breeding in Cheeſe, rub it over where you ſee them begin to breed, with Oil or Oak-aſhes once in three Months, and it will kill them.

When a Cow is near calving, for about a Fortnight or three Weeks before, put her into good Graſs; or if it be in Winter, give her Hay; and when ſhe hath calved, that Day and Night keep her in the Houſe, and let a little of the Cold be taken off the Water which you give her: Next Day about the Middle of the Day turn her out if well, and well cleaned, and take her in two or three Nights more, giving her Water a little warm every Morning before you turn her out.

For *Calves*, there are two ways of breeding thoſe that you deſign to rear; the one is to let them run with the Dam all the Year, which is the common way uſed in the cheap-breeding Countries, which they reckon makes the beſt Cattle; and the other way is to take them from the Dams after they have ſucked about a Fortnight: Then they teach them to drink flet Milk, which they do but juſt warm for them, it being very dangerous to give it them too hot. The beſt time for weaning of Calves is from *January* to *May*. Let your Calves have Milk for about twelve Weeks; only a Fortnight before you wean them from Milk, let Water be mixed with the Milk; and after your Calf hath drank Milk about a Month, take ſome of the fineſt, ſweeteſt Hay you have, and put little Wiſps of it into ſome cleft Sticks, which place, ſo as the Calf may eaſily come at them for to learn him to eat; and after *Lady-day*, when the Weather is fair turn your Calves to Graſs, taking them in a few Nights at firſt, giving them

Milk and Water, and ſometimes giving the ſame to them in a Pail in the Field, till you find they are able to feed of themſelves as not to deſire it: But by no means let your Graſs be too rank, but ſhort and ſweet, that they may get it with ſome labour. All wean their Calves at Graſs; for if you wean them in the Houſe with Hay and Water, it is apt to make them big-belly'd and to rot; and when you have reſolved which to keep of the Males for Bulls, let the others be gelt for Oxen, which the ſooner you do, the better: When they are about ten or twenty Days old is the beſt time, and leaſt dangerous.

In *Hertfordſhire*, *Eſſex*, and moſt places near *London*, they commonly fat all their Calves for the Butcher, becauſe they have there a good Market for them, and their Lands are not ſo profitable to breed on as in cheaper Countries; a good Calf there often ſelling for as much as a good Heifer, eſpecially if they are very Fat and White, which they take a great deal of care to make them; their way of doing of which is by keeping of them clean, giving of them freſh Litter every day, which they lay upon their old Litter; for they clear out their Coops but two or three times in a Year, and moſt commonly at ſuch a time as they have no Calves in them; they conſtantly alſo let them have a large Chalk-ſtone or two to lick, which they bore a hole through, and hang up by a ſtring in a Corner of the Coop. They alſo obſerve to ſet their Coops where they may have as little Sun come on them as they can, that they be not made cloſe and ſtifling, and that they ſtand a Yard above the Ground, that the Urine may run from them.

Of *Oxen*, the largeſt are eſteemed the beſt for *Draught*, or for *Feeding*, (where there is Land able to bear them,) ſuch being the ſtrongeſt to endure Labour. For his Shape, it differeth little from that of the Bull; they that are the gentleſt are the beſt for the Yoak. In matching of them, let them be as near as you can of one Height, Spirit, and Strength; elſe one will be apt to injure the other, and you muſt take care not to put them beyond their ordinary Pace, for heating of them puts them into Surfeits, and produces all Manner of Diſtempers in them.

The time of putting of Oxen to work is at three Years old, at which Age, for the firſt Year, work them very gently, eſpecially in hot Weather, and feed them with a good deal of Hay, which will make them better able to endure their Labour, than Graſs will; the keeping of them in a Middle-ſtate, neither too fat, nor too lean, is beſt; they commonly work them 'till they are about ten or eleven Years old, and then ſell them; let them always be uſed gently; for meat and fair words brings them ſooner to the Yoak, than fear or blows: But the beſt way to rear up young ones, beſides gentle Uſage, is to couple them with an old gentle Ox; if they are unruly, let them be tyed with a Rope, and keep them hungry, that they may take meat often out of your Hand.

Oxen are much more profitable to keep, than Horſes, there being no loſs in them; if they prove either lame, or old; an old worked Ox fatting as well, and being as good Meat as a young one, and then their Feed is much cheaper becauſe they eat no Oats; and ſo is their Harneſs and Shooes: They are likewiſe not ſo ſubject to Diſeaſes as Horſes; but you muſt have a good bite of Graſs and good Hay for them in Winter; only they are not ſo good for Draught where your ways are good, and that you have Occaſion to cart much; but for Winter-plowing where you have a heavy Soil they will do as much as Horſes, eſpecially a ſort of a long legged nimble Ox, that they ſell at St. *Ives* Fairs in *Huntingtonſhire*, which will of any Work do almoſt as much as a Horſe: Where any can keep two Teams, let it be in what place it will, I ſhould chooſe to have one of my Teams, of Oxen. The yoaking of Oxen together by the Necks and Breaſt, is much better than the doing of it by the Horns; and where a Man keeps an Oxe-Team, it is neceſſary, that he ſhould rear two Oxen and two Cow-Calves every Year to uphold his Stock; for it is better for a Farmer as to all neceſſary things, that he be a Seller, than a Buyer.

Cattle are bought in to fat at Spring, and about *Michaelmas*; thoſe you buy in at Spring, will be fat in *July*, *Auguſt*, or *September*, according as they are forward, and you have keeping for them; and thoſe that you buy in *Auguſt*, *September*, or *October*, muſt be either to ſell in Winter or in Spring, and muſt be forward in Fleſh to be improved the beginning of Winter, and only kept up in Fleſh during the hard time of Winter, either with Hay or Turneps, to be fit for a good Market whenever it offers; or they muſt be young, lean Cattle, that may by their growth pay for their Wintering, and ſo be ready to fat next Summer. Some upon ordinary Land buy in young Welch Heifers, which if they prove with Calf, they ſell in Spring with a Calf by their ſide for the Dairy; and thoſe that are not with Calf, they fat: All which ways turn to good account, according as the Prices fall out; but moſt commonly, all Meat either at *Chriſtmas* or at Spring, is one third part dearer than in Summer: Becauſe all have not the Conveniency either of Hay or Turneps to fat Cattle with in Winter; and it is but in few places, eſpecially near *London*, (which is the chief Market for fat Cattle,) that Hay can be afforded to fat them with; for they reckon an Ox that coſt about ſix Pound, will need about two Load of Hay to keep him up all Winter.

For the Wintering of Cattle; about *September*, you muſt turn them out that you deſign to keep up for a Winter, or a Spring-Market, and your Cows that give Milk unto your Rowens, 'till Snow or a hard Froſt comes, and they will need no Fodder; but if Snow or Froſt comes, you muſt give Hay to your Cows near calving, or thoſe that have lately calved, or that give a great deal of Milk, and to your fatting Cattle, and that every Morning and Evening, which you muſt proportion according to the Quantity of Rowen or Tore that you have upon the Ground; the more Tore you have, the leſs Quantity of Hay will do, and even the ſowre Graſs that your Cattle would not eat before, when the Froſt hath taken it, will be good ſweet Food for them, and what they will eat with pleaſure, if it is not covered with Snow that they cannot come at it. But for your lean Cattle, and thoſe that give but a little Milk, Straw will do well enough to fodder them with, only you muſt obſerve to give the Barley-ſtraw firſt, and the Oat-ſtraw laſt, except you value their Milk; if you do, give to ſuch Cows your Oat-ſtraw, if the Quantity of Milk that they give doth not deſerve Hay, or that Hay is ſcarce with you; for Barley-ſtraw will quite dry up that Milk that they have, tho' it is good Food for dry Cattle; but if your Hay fail you, to thoſe Cows which you deſign to continue the Milk of, give Malt-duſt, upon which pour ſcalding-hot Water, and it will cauſe it to ſwell mightily; let it ſtand 'till near cold, and give it to the Cow like a Maſh, and it will cauſe her to give a great deal of Milk, tho' ſhe eat Straw with it. A Buſhel that coſts but about Three-pence will ſerve a Cow a Week. But about London they give to their Cows in Winter, Grains, (of which they have plenty) which makes them give a great deal of Milk, but it is apt to rot them if given in too great Quantities, and for too long a time: But when your Tore is quite eaten up, which it will commonly be about *February*, you muſt houſe your Milch-Cows, that you give Hay to in your Cow-houſe all Night, and your other Cattle in your Yard; for which uſe you ſhould have two Yards; one for your Cattle which eat Hay, and another for your Cattle which eat Straw, with Racks and other Conveniencies to fodder them in; obſerving that what you do give them, to do it often, and not to give them too much at a time; becauſe when they have blown on it, they will not eat it; both your Yards ought to be well ſheltred, and made as dry as you can, and a good deal of Straw given them to lie dry and warm in, which is a very great Advantage to them, and will much increaſe the Quantity of your Dung.

As to the Buying of fat Cattle, Milch-Cows, or lean Cattle, Experience and the Advice of thoſe that underſtand them, is the beſt Inſtructor.

For the feeding of Land, you may do it with Beaſts and Horſes together, or with Beaſts firſt, and Horſes afterwards; and after both put in Sheep: But let not your Graſs be too rank before you feed it; for if you do, it will be ſowre, and your Cattle will not eat it, except only the Tops, and ſo the other part will lie untouched, and rot upon the Ground, for no Beaſt will eat ſowre Graſs 'till the Froſt hath taken it. Obſerve alſo where you have Incloſures, to be often changing of your Cattle from one Paſture to another; for by that Means you will give your Land an opportunity of getting of a freſh Head, freſh Graſs being a mighty help to the Feeding of Cattle.

As to the Diſtempers of theſe Sorts of Cattle, take theſe following Receipts.

§. 1. *For the Garget Plague or Murrain in Bulls, Cows, or Oxen.* See *p.* 159.

Moſt Authors confound theſe Diſtempers together; but whether they be the ſame, and only differ in the Degrees of the Malignity, I cannot determine;

termine; but commonly the ſame remedies are propoſed for both, tho' the Garget ſometimes appears in the Head, and ſometimes in the Maw, and ſometimes in the Hinder-parts. When it lies in the Head, it is known by the Swelling of the Eye-lids, Bliſters on the Tongue, *&c.* When in the Maw, by drooping and heavineſs, panting of the Heart, hanging down of the Head, Coſtiveneſs of the Body, *&c.* And when behind he will be very ſtiff, and his Guts will rumble, *&c.*

If Bliſters be on the Tongue take them off with a ſharp Knife, and ſlit the Tongue underneath an Inch long, but not deep, and an infectious Water will come out, which waſh with Vinegar. If it lie in the Maw, or behind, let Blood in the Neck-Vein; and for either of theſe Diſtempers give the following Drink, or that which is mentioned hereafter for the Murrain, which hath been recommended much to me by thoſe that have often experienced them.

§. 2. *For the Gargle.*

Take Polypody of the Oak and Burdock-leaves, of each a handful; for want of the Leaves take the ſame Quantity of the Roots, ſhred them ſmall, and put them into a Pint of Milk and boil them; let it cool, ſtrain it, and give it the Cow.

For the Head-Gargle, give Powder of Fenugreek, Turmerick, Liquorice, Aniſeeds, of each an Ounce; of long Pepper half an Ounce, beat all to Powder; boil it in a Quart of Ale, giving of it Blood-warm.

§. 3. *For the Murrain,*

For the Signs of it ſee Page 151.

For the Cure

Take unſlacked Lime, Coriander-ſeed, Marjoram and Garlick, beat all to Powder, and ſprinkle it on Coals, letting the Fume of it go up the Beaſts

Noſtrils; it will bring away a great deal of the infectious Humour.

Take Plantain, Rue, Southernwood, Shepherds-purſe, Smallage, Coleworts, of each a Handful; bruiſe them, and with a Handful of Hens-dung, lay them in ſteep in a Pint of old Waſh eight Hours; ſtrain the Liquor, and add a Quart of Ale to it; put it on the Fire, conſuming it to one half, and put into it an Ounce of Treacle, a Spoonful of Juice of Garlick, half an Ounce of Aniſeeds, and the like Quantity of Liquorice, and give it luke-warm.

§. 4. *For the Worm in the Tail.*

This is a Diſtemper that breeds in the End of Cattles Tails, like unto an eating Canker, which will cauſe them to grow lean, and ſo weak in their Back, that they cannot riſe when down, and ſometimes will make their Teeth looſe. You may know it by the Hair being eaten off where the Worm lies, and you may by feeling with your Fingers find ſome of the Joints eaten aſunder.

To cure it, take Soot, Rue ſtamped, Salt and Butter, and mix them well together, and apply it to the Tail, having firſt ſlit the inſide of it about two or three Inches long, juſt above where the Joint fails, and rub her Teeth with Juice of Oranges, or Juice of Scurvy-graſs; you may likewiſe give her the following Drink for inward Diſtempers.

§. 5. *For any inward Diſeaſe in Cattle.*

If you cannot find out what the Diſeaſe is, take a Quart of Ale, Wormwood, Rue, and Roſemary; of each an Handful, bruiſe it in a Mortar, boil it, and ſtrain it; adding to it two Spoonfuls of the Juice of Garlick, as much of the Juice of Houſleek, and as much *London*-Treacle; mix all well together, and give it luke-warm.

To know if any Diſtemper is growing upon them, view the Top of their Noſes in a Morning, and if Pearls like Drops of Dew hang upon them, they are in Health; but if they are hot, dry, and ſcurfey, ſome Diſtemper is beginning to grow.

§. 6. *For any Impoſthume, Boil, or Swelling.*

Take Lily-roots, boil them 'till they are a pap in Milk, and apply it hot to the Sore. When the Sore comes to be ſoft, you may open it with a hot Iron, if you find need, and heal it with Tarr, Turpentine and Oil mixed together, adding a little Hogs-lard to it when boiling-hot.

§. 7. *To kill Worms.*

Chop Savin ſmall, and mix it with ſweet Butter, roll it into Balls, and give it for two or three Days; after give them about a Pint of Sweet-Wort, in which diſſolve a little black Soap, and it will bring them away; keep them warm after it, giving them warm Water, and without Meat three Hours.

§. 8. *Of Bleeding a Cow.*

Except it is an extraordinary Caſe, never take above a Pint of Blood from a Milch-Cow at a time.

§. 9. *For a Looſeneſs or Bloody-Flux.*

Take ſome Sloes, boil them in a little Water, and add ſome powdered Chalk, and a little Quantity of Whiting to it, and put it when cold into the Water which the Cows drink.

Chap. VI. *Of Sheep.*

S*Heep* are not only a very uſeful Creature, but very profitable too, and will be kept and fatted upon much worſe Land than any of the former Stock; and therefore they are by ſome preferr'd before any other Sort of Cattle. The beſt breed for fine Wooll is *Hereford* and *Worceſterſhire*; but they are a ſmall black faced Sheep that bear but a little burthen. *Warwick*, *Leiceſter*, *Buckingham* and *Northamptonſhire*, bear a large boned Sheep of the beſt Shape and deepeſt Staple: *Lincolnſhire* in the ſalt Marſhes breeds the largeſt Sheep, but not the beſt Wooll, tho' they are lately much amended in their Breed. *Yorkſhire*, and ſo Northwards, bears Sheep of big Bone, but their Wooll is rough and hairy. *Wales* bears a hardy ſmall Sheep that hath the worſt Wooll, tho' the beſt taſted Fleſh. For Sheep, as well as other Cattle, buy them from a worſe Land to bring on to a better, and ſee that they be big boned, and have a ſoft greaſie well curled cloſe Wooll, for ſuch Sheep bear the beſt burthen, and are always moſt eſteemed by the Butcher.

For the Choice of Sheep for breed, ſee that the Ram be young, and that his Skin be of the ſame colour with his Wooll; becauſe the Lambs will be of the ſame colour with his Skin; that he be of a large long Body, his Fore-head broad, round, and well riſing, his Eyes chearful and large, his Noſtrils ſtraight and ſhort, *&c.* The polled Sheep (that is Sheep without Horns) are reckoned the beſt Breeders, becauſe the Ewes yean the polled Lamb with the leaſt danger, and becauſe ſo much of the Nouriſhment doth not go into the Horns. An Ewe ſhould have her Neck large and upright, bending like a Horſes, her Back broad, Buttocks round, thick Tail, ſmall Legs but ſhort, clean and nimble; the Wooll thick and deep, covering her all over: And to know whether they are ſound or not, ſee that none of the Wooll be wanting, that their Gums be red, Teeth white and even, the Briſket-ſkin red, the Eye-ſtrings ruddy, the Felt looſe, the Wooll faſt, the Breath ſweet, and the Feet not hot: For if they are rotten, the Eyes are pale and dark, the Gums white, the Wooll eaſie to come off, the Teeth yellow and foul; and when dead you may ſee the Belly full of Water, the Liver putrefy'd, the Fat yellow, and the Fleſh moiſt and wateriſh; as for their Age two Years old is the beſt Age to have Sheep at. In order to know which, when a Sheep is one Shear, as they call it, they will have two broad Teeth before; when two Shear, four; when three Shear, ſix; when four Shear, eight: And after that their Mouths will begin to break.

For Land to breed Sheep on, it is obſerved, that fat Paſture breeds ſtraight, tall Sheep; and Hills and ſhort Paſtures breed ſquare ones, Woods and Mountains ſmall and ſlender Sheep; but the beſt for all Sheep are new plowed up Land, and all dry Grounds; and ſo on the Contrary, all wet, moiſt Lands are bad, eſpecially ſuch as are overflowed, and ſoiled with Sand and Dirt, except the ſalt Marſhes, the Saltneſs of which makes amends for their Moiſture, any thing of Salt by reaſon of its drying Quality, being of great Advantage to Sheep.

As for the time of putting the Rams to the Ewes, you muſt conſider at what time of the Spring your Graſs will be fit to maintain them and their Lambs, and whether you have Turneps to do it with 'till your Graſs comes: For many times both Ewes and Lambs are killed for want of keeping; or the Lambs very often ſtunted in their Growth, which if once they get will be a very great hindrance to them, and a long time before they will recover it: And therefore as an Ewe goes twenty Weeks with Lamb, you may eaſily calculate the time for her, to take Ram in: But the beſt time for them to yean in is *April*, except where you have very forward Graſs, or Turneps or that your Sheep are Field-ſheep, where you have not Incloſures to keep them: Then it will be neceſſary to have them yean in *January* or *February*, that the Lambs may be ſtrong before *May-day* to follow the Ewes over the Fallows and Water-furrows: But then Lambs that come ſo early muſt have a great deal of care taken of them, and ſo muſt all other Lambs at their firſt Falling: Elſe while they are weak, the Crows and Magpies will be apt to pick out their Eyes: If you ſave the Graſs and Weeds that grow in the Lands that you deſign to fallow in Winter, that is from *Chriſtmas*, and turn your Ewes and Lambs into them in *March*, if you have a mild Winter, it will be a great help to them.

Your Ewes that are big, and other Cattle, ſhould be kept but bare; becauſe it is very dangerous for them to be fat at the time of bringing forth their Young, except only for about a Fortnight or three Weeks before they may be pretty well kept to get them a little into heart.

As to the weaning of Lambs in ſome places they never ſever the Lambs from their Dams, eſpecially in the beſt Paſture where the Ram goes conſtantly with the Ewes; becauſe the Ewe when ſhe goes to Ram again, will go dry, and wean the Lamb her ſelf; and likewiſe in unſound Paſture they reckon it the beſt for Lambs to run with the Ewes, becauſe they ſeldom rot while they ſuck, except they want ſuck; and in ſuch caſes it is much better to ſell them to the Butchers; but they that have ſound Paſtures may wean them at ſixteen or eighteen Weeks old, if they find it inconvenient to let them run longer.

About *Michaelmas* you ſhould ſeparate the Male from the Female, and having choſen out the beſt, thoſe which you deſign for Rams put by themſelves, the reſt geld that are not gelt already: But the beſt time of doing it is while they are very young.

The beſt time of ſhearing of Sheep is about the Middle or latter End of *June*; becauſe it is good for them to ſweat a little in their Wooll before you cut it; and they muſt be very well waſhed, which is a great help to the Price of your Wooll. Let them go two or three Days after in clean dry Ground before they be ſhorn; in doing of which the Shearer muſt take care not to hurt them with the Point of the Shears, nor yet to cut their Skins, becauſe of the Flies; and ſee that the Wooll be well wound up. Some ſhear their Lambs too, which they do cloſe behind, but very little before, eſpecially the firſt Year: But before they are ſhorn, great care ought to be taken to tag them, as they call it, which is to clip away the Wooll of their Tails, and behind, that the Dung may not hang on it, which elſe will occaſion them to be ſore, and the Flies to blow them, and fill them with Maggots.

In *Glouceſterſhire* they houſe their Sheep every Night, and litter them with clean Straw, which affords a great advantage to their Land by the Manure, and they ſay makes their Wooll very fine.

In *Middleſex* and round *London* they buy *Way-hill* Sheep, which are a Sort of Sheep bred in *Hampſhire*, *Wiltſhire*, &c. that Lamb very early, commonly before *Chriſtmas*; theſe Lambs they keep in little Penns in a Houſe, and bring the Ewes two or three times a Day to them to ſuckle them, which quickly makes the Lambs fat even in the hardeſt Weather, eſpecially if they have Turneps to give the Ewes; becauſe the Lambs are ſheltred, and do not ramble about in extremity of hard Weather. Where they have not Turneps, ſome give to their Ewes the fineſt Hay, and Bran, and Oats.

Some make a great Improvement of their Lands by folding of Sheep upon them, which Folds they make with Hurdles, ſo as to remove them from one place to another; and ſo when the Sheep have dunged one place, they new place the Folds, and dung another, by putting the Sheep into them every Night, which they only do in Summer-time, as near as they can in good Weather, becauſe folding of them is apt to make them have the Rot; and care ſhould be taken when they are let out in a Morning, not to do it before the Sun is riſen, and then they ſhould be drove to a good Feeding-place; for being hungry they will eat any thing that comes next; the not obſerving of which, many times is a great Prejudice to them, eſpecially in moiſt ill Ground; but many reckon all Folding of Sheep to be very bad for them, particularly if Storms or ill Weather happen; and therefore they rather chuſe to ſtick Stakes ſloping in the Ground, to which the Sheep will come and rub themſelves, and ſo Dung and Urine on thoſe Places where they ſtick them.

The great Inconveniency which attends Sheep, is their being ſubject to the Rot; which it is a hard thing to prevent, if the Year prove very wet, eſpecially in *May* and *June*, except it be in ſalt Marſhes or in broomy Lands, Broom being one of the beſt Preſervatives againſt that Diſtemper of any thing. I have known Sheep cured of the Rot, when they have not been far gone with it, only by being put into Broom-lands. Scurvy-graſs, Parſly, Muſtard and all other Sorts of hot Herbs are good for the Prevention of it. Some propoſe to give Sheep once a Month, or oftner, half a Handful of Bay-ſalt, which may be of ſome Service to them: But as the Rot, Red-water, and moſt of the Diſtempers that Sheep are ſubject to, proceed from too much Moiſture of the Land they feed on, and the Seaſon of the Year; ſo I ſhould think that dry Food at ſuch times, and the keeping of them on dry Land in wet Seaſons, and to give them fine Hay, Oats, Bran, *&c.* (amongſt which ſome Salt might be mixed) might be the beſt and propereſt Food for them to prevent theſe Diſtempers. But I ſhall refer a fuller Treatiſe of theſe Sort of Cattle to my Appendix.

Chap. VII. *Of Goats.*

G*Oats* are of Advantage to be kept in rocky, barren Places, where other Cattle cannot get a livelyhood: They will climb the higheſt craggy

Rocks to feed upon Briars, Buſhes, Heath, and other Wood: And tho' they will feed in plain Paſtures, yet their chief delight is in browſing upon Trees; and therefore great care ought to be taken to keep them from all Sorts of valuable Plantations; the chief Profit of them is their Milk, which is eſteemed the greateſt Nouriſher of all liquid things on which we feed (except Woman's Milk) and the moſt comfortable to the Stomach: Many mix it with other Milk in barren Countries, where they cannot keep many Cows to make Cheeſe with, for which uſe it doth very well: Their Kids alſo are very good Meat, which the beſt Sort of them commonly produce twice a Year, and two or three of them at a time; ſome Out-landiſh Sorts of them more. Some ſhear their Hair to make Ropes with, which will lie a long time in Water without rotting, and ſome make particular Sorts of Garments of it.

The Goat ought to have a large Body, well haired, great Legs, upright Joints, not bending, a Neck plain and ſhort, Head ſmall and ſlender, large Horns and bending, a big Eye, a long Beard: and the She ſhould have large Teats, a big Udder, hanging down Ears, and no Horns, at leaſt very ſmall ones.

For the ordering of them they ſhould be kept in Flocks or Herds, that are uſed and aſſociated together, or each Party will be apt to ſtraggle from the other. They ſhould have good ſhelter both from the heat in Summer, and cold in Winter: For they can neither endure the Extremities of the one or the other, eſpecially the Shees which are with Kid. The beſt time for the Male and Female to go together, is about *December*. If you houſe them in Winter, let them have no Litter to lie on, becauſe it is too hot for them; but let the Floor be paved, that they may be kept ſweet and cleanly: For they cannot endure ill Savours. As for the Kids they are to be ordered in all things as they order Lambs.

If Goats are ſuffered to go and chuſe their own Food, they are ſuch good Phyſicians to themſelves that they are ſeldom troubled with any inward Diſtempers; only the unnatural Exceſs of their Luſt makes them ſoon grow old, and ſo quickly become paſt Uſe and Profit. They are reckoned very good to lie amongſt Horſes; the Scent of them, as they ſay, being of great Advantage to prevent the Horſes falling into Diſtempers.

Chap. VIII. *Of Swine.*

S*Wine* are very advantageous to the Country-man, not only for their great Increaſe, but alſo in that they feed upon what would otherwiſe be of no Uſe or Advantage, but would be flung away; as Whey, Waſhing of Tubs, Grounds of Drink, Diſh-water, Grains, *&c.* And their Fleſh being beſt ſalted or kept in Pickle may be eat in the Spring when other Meat is at the deareſt, beſides the helps it affords to the taking off Garden-Commodities, and the Variety of Diſhes of the Offal. They are indeed very greedy and given much to root up Ground, and to break Fences; and therefore the more care muſt be taken of them to keep them well rung and well yoked.

The largeſt Swine, and the greateſt Numbers for any particular Places, are bred in *Leiceſterſhire*, and ſome Parts of *Northamptonſhire*, and in the clay Countries thereabouts, which, I ſuppoſe, proceeds from the great Quantities of Beans and Peaſe ſowed in thoſe Parts.

The wild Kind are not ſo large as theſe Sorts, but are much hardier and better Meat.

In the Choice of Swine chuſe ſuch to breed of as are of long large Bodies, deep ſided and bellied, that have a ſhort Noſe, thick Thighs, ſhort Legs, high Claws, thick Neck, a ſhort ſtrong Groin, and a thick Chine well ſet with ſtrong Briſtles.

To have too many Sows in one Yard is not good, for their Increaſe is ſo great, that they will for want of Food, not only devour whatever comes in their way, but eat one another: For a Sow will bring forth Pigs three times in a Year, that is, at the End of every ſixteen Weeks: And I have heard of a Sow that hath had twenty Pigs at a Litter: It is common for them to have thirteen or fourteen; but the Sow can rear no more than ſhe hath Teats to ſuckle them with; the reſt muſt be flung away, or put to other Sows. Some eſteem them the beſt Pigs to keep for Store that ſuck the foremoſt Teats; but for what reaſon I cannot tell. If the Sow miſs the time of going to Boar that ſhe might in courſe have done, give her to eat ſome Oats parched in a Pan in her Waſh, or the ſmall End of the Runnet-Bag, which will cauſe her quickly to go to Boar. The Pigs which you rear, after you have choſen out the beſt for Boars and Sows the Males muſt be gelt, and the Sows ſpay'd; the ſpay'd Gelts, as they call them, they eſteem the more profitable, becauſe of the great Quantity of Fat that they have upon their inwards more than the Hogs. Young Shoots which are Swine of about three Quarters of a Year old are beſt for Pork, and thoſe of a Year or a Year and a half old for Bacon. The beſt Age for a Sow to bring forth Pigs is from one Year to ſeven Years old; and the beſt Pigs to rear are thoſe which are pigged in the Spring. The beſt way of taking care of Swine is to feed them ſo as to keep them in a good, midling Plight, 'till you deſign to fat them: For if you keep them too fat, it will indanger their Health; and too lean will make them too ravenous. 'Tis good to give them ſuch ſwill as you have every Morning and Evening to make them come home to their Coats; the reſt of the day, let them graze, and get ſuch Food as they can; only when Corn is upon the Ground, you muſt be careful to keep them within bounds. Moiſt ſedgy Grounds are good for 'em, the Roots of which they will eat; and all Sorts of Haws, Hips, Sloes, Crabs, Acorns, Maſt, Cheſtnuts, *&c.* with which if you have plenty enough to fat them, their Fleſh will eat much better, and ſweeter, than if fatted in a Stye: Only ſome ſay their Fat will not be ſo ſolid, nor ſo profitable: And therefore they commonly ſhut them up for a Week or ten Days, and feed them with dry Peaſe or Corn, to make their Fat firm. But 'tis a Miſtake. I have killed Hogs fatted with Acorns, whoſe Fat was as ſolid as any fatted with Peaſe. In the fatting of Hogs in Styes, they obſerve to give them Meat often, but little at a time, that it may be always freſh; and likewiſe to give them as much Water as they will drink, and to keep them very clean, which will much help their Fatting, and mend the Taſte of their Fleſh. But where the Huſbandman lives remote from Wood, or that the Year doth not hit for Acorns, or Maſt, they commonly fat them altogether in Styes with Peaſe, if cheap; if dear, with the Meal of Barley, Rye, or Offal corn, according as they are cheapeſt, which they mix with Water, Whey or Skim'd-milk, with which they feed them, 'till fat; which will commonly be in about a Month's time, and then they feed them with Peaſe, only a little before they kill them.

Obſerve, That every Stye have a Yard well paved with Stone, if you can, for the Hog to go out and eaſe himſelf in, that he may keep his Lodging the cleaner and air himſelf.

In *Leiceſterſhire* they have a very eaſie way of fatting great Numbers of Swine, which they do, by ſtacking up their Peaſe and Beans, which they ſhape like to the Form of a ſmall Cottage. This they ſet near ſome running Brook, and hedge a Yard in round about it, taking ſome Part of the Stream into the Yard for the Hogs to drink at, into which they turn ſuch a Number of Hogs as they think their Peaſe or Beans will fat, where they let them live 'till their Proviſion is conſumed, cutting the Reek down, and giving it to them as they can eat it. By this way they fat very great Numbers, which they diſpoſe of at *London* for Sea.

As to the Diſtempers that Hogs are ſubject to, they eaſily ſhow their Illneſs, if they ail any thing, by the hanging down of their Ears, their dull heavy Looks, and the loſs of their Appetite, which they never recover 'till they are well again. If you are to buy Hogs, and ſuſpect their Healthineſs, draw a Handful of Briſtles againſt the grain of the Hair; and if the Root be white and clean, the Hog is ſound; but if they be bloody or ſpotted, he is ſick.

§. 1. *For the Gargol in Hogs.*

The Signs of which are hanging down of the Head, and carrying it on one ſide, moiſt Eyes, ſtaggering and loſs of Appetite. 'Tis occaſion'd from corruption of Blood, ingendred by the eating of rotten Fruit, Garbidge or Carrion, rank Graſs, wherein is much Hemlock, *&c.* For the Cure of which, firſt let them Blood under the Tail, and under the Ears, and give the following Drink.

Take Angelica, Rue, Staverwort, or Hog's-Madder, and May-weed, of each a Handful; ſhred them very ſmall, and boil them in a Pint of Milk very well; and when 'tis cold enough, add to it a Penny-worth of Sallet-oil, and the ſame quantity of Treacle. This Receipt I had from one that has often try'd it, and tells me he never found it to fail.

§. 2. *For the Meaſels.*

The Sign of the *Meaſels*, is, if you find under their Tongues ſmall black Bliſters, or that they cannot ſtand on their Hinder-legs, or that their Briſtles when pulled out are bloody.

Give the Hog in his Waſh an Ounce of crude Antimony powder'd, and keep him in the Stye three or four Hours after giving of it, and repeat it 'till cured. Some give them Brimſtone in their Meat, which they ſay is an extraordinary thing; and that if you give to a well Hog an Ounce of crude Antimony, it will make him fat above a Fortnight ſooner than another Hog that hath the ſame Meat, giving half a Drachm at a time. If Hogs get a Swelling on the ſide of their Throat by eating of Acorns, lance it; and anoint it with Hog's Lard, and it will quickly be well.

Chap. IX. *Of Rabbets or Coneys.*

R*Abbets* are very profitable Creatures for their great Increaſe, and their being kept on dry barren Sand or Gravel that will maintain nothing elſe; which the dryer 'tis the better for them; this Sort of Lands they much improve by their Dung for Rye. Beſides which many make great Profit of them, by keeping of them in Hutches near great Towns, and ſome keep great Quantities of them in Pits for to catch, when they want them; they being a very ready diſh upon any Occaſion: But the Pits muſt be in a very dry warm Soil; if they are any thing deep, they will be elſe too cold, or too damp for them. I ſhould rather prefer for them a large Barn made very tight after the way of making of Barns for preſerving of Corn in, to keep Vermin out of: For the tame Rabbets muſt lie dry, and warm, or elſe they will not breed in Winter, which is the chief time of their Profit, and what makes them preferred before the wild ones, and they are much better Meat, if they have their Liberty; eſpecially the white ſhock Turky Rabbet.

Chap. X. *Of Dogs.*

D*Ogs* are not reckoned among the Number of the profitable Cattle, but as they are upon ſeveral occaſions very uſeful to the Farmer, and what he cannot well be without; and they being of ſeveral Sorts, I ſhall leave the particular Deſcription of them to the Lovers of Sport, who are the moſt concerned to be curious in the particular Kinds and Shapes of them. And what I ſhall propoſe ſhall only be ſome Remedies that may be a help to ſome of their common Diſtempers; eſpecially for that of Madneſs, which is a very prejudicial Diſtemper, not only in the loſs of a good Dog, but in that he may infect the reſt of the Stock; and be alſo very dangerous to the Family and Neighbourhood.

I ſhall in this Caſe, for the publick good, adviſe every one that keepeth a Dog, to have him wormed, which is a thing of ſmall Trouble or Charge, and what, I believe, will prevent their being mad, if they are not bit with a Dog that is mad; and if they are, I am apt to think it prevents their biting of any other Creature; for I had three Dogs bit with mad Dogs at three ſeveral times that were wormed; and though they died mad, yet they did not bite or do any miſchief to any thing I had. And having a mind to make a full Experiment of it, I ſhut one of them up in a Kennel, and put a Dog to him that I did not value. The mad Dog would often run at the other to bite him, but I found his Tongue ſo big ſwell'd in his Mouth that he could not make his Teeth meet. This Dog (though I kept him with the mad Dog 'till he died) did not ail any thing, though I kept him two Years afterward, and gave him no Remedies to prevent any Harm from the biting of the mad Dog. But as there are ſeveral Sorts of Madneſs in Dogs, ſo I cannot tell whether the Effects are the ſame in all. But my Dogs ſeemed to die of the black Madneſs, which is reckoned the moſt dangerous. And therefore I cannot tell how far the following Receipt may be effectual in all Sorts of Madneſs, tho' it has not failed in curing all the Dogs that were bitten, I have given it to; tho' all thoſe I gave it not to, died. The Remedy is this. "Take white Hellebore and grate it with a Grater to Powder, which "you mix with Butter, and give it to the Dog. The Doſe muſt be proportioned to the ſize of the Dog; to a very ſmall Lap-dog you may give three Grains, and to a large Maſtiff ſixteen Grains; and ſo in proportion to other ſizes. The beſt way is to give but a ſmall Quantity at firſt: You may increaſe the Doſe as you find it to work, or not to work. But as 'tis a ſtrong Vomit, and what will make them very ſick for a little time; ſo you muſt be careful to keep them warm that Day you give it, and the next Night, and do not give them any cold Water; but when it hath done working, towards the Afternoon, give them ſome warm Broth: And the next Morning give the ſame before you let them out. This is an extraordinary Remedy likewiſe for Mange; I never knew three Doſes of it fail of curing any Dog that had it, except he had a Surfeit with it: Which if he have, let him blood alſo, and anoint him two or three times over with Gun-powder and Soap beat up well together, and it will cure him.

I have heard of a Gentleman who cured ſeveral Creatures that were bit with mad Dogs, with only giving them the middle, yellow Bark of Buckthorn, which you muſt boil in Ale for a Horſe or Cow, and in Milk for a Dog; and being bit with one himſelf, he adventured to take nothing elſe, and did very well. You muſt boil it 'till 'tis as bitter as you can take it.

Chap. XI. *Of Fowls.*

THE Country-man's Farm or Habitation cannot be ſaid to be compleatly ſtored or ſtocked without *Fowl* as well as Beaſt, which yield a conſiderable Advantage by their Eggs, Brood, Bodies and Feathers. Any poor Cottager that lives by the High-way-ſide may keep them, they being able to ſhift for themſelves the greateſt Part of the Year, by their feeding on Inſects, Corn, or any thing almoſt that is edible by any other Sort of Animal: And therefore they are kept to great Advantage at Barn-doors, and other Places, where Corn or Straw is ſcattered.

As for Cocks and Hens, I ſhall not enter into a Deſcription of the ſeveral Sorts of them, only adviſe you to chuſe thoſe that are the beſt Breeders, and the beſt Layers; the oldeſt being always reckoned the beſt Sitters and the youngeſt the beſt Layers; but no Sorts will be good for either, if they are kept too fat: The beſt Age to ſet a Hen for Chickens, is from two Years old to five; and the beſt Month to ſet them in, is *February*, tho' any Month between that and *Michaelmas* is good. A Hen ſits twenty Days, whereas Geeſe, Ducks and Turkeys ſit thirty. Obſerve to let them have conſtantly Meat and Drink near them while they ſit, that they may not ſtraggle from their Eggs, and chill them.

One Cock will ſerve ten Hens.

If Fowls are fed with Buck or French-Wheat, or with Hemp-ſeed, they ſay, they will lay more Eggs than ordinary; and Buck-Wheat either whole or ground, and made into Paſte, which is the beſt way, is a Grain that will fat Fowls or Hogs very ſpeedily; but the common Food to fat them with, is Barly-meal wet with Milk or Water: but Wheat-flower is better.

Chap. XII. *Of Geeſe.*

G*Eeſe* are profitable many ways, as for Food (for which they commonly bear a good Price) their *Feathers*, and their *Greaſe*. They will live upon Commons or any Sort of Paſtures, and need little Care or Attendance; only they ſhould have plenty of Water. The largeſt Geeſe are reckoned the beſt: But there is a Sort of Spaniſh Gooſe, that is a much better Layer, and Breeder, than the Engliſh; eſpecially if the Eggs are hatched under an Engliſh Gooſe.

Geeſe lay in the Spring, the earlier the better; becauſe of their Price, and of their having a ſecond Brood. They commonly lay twelve or ſixteen Eggs a Piece. You may know when they will lay, by their carrying of Straw in their Mouths; and when they will ſit, by their continuing on their Neſts after they have laid. A Gooſe ſits thirty Days; but if the Weather be fair and Warm, ſhe will hatch three or four Days ſooner. After the Goſlins are hatched ſome keep them in the Houſe ten or twelve Days, and feed them with Curds, Barly-meal, Bran, *&c.* After they have got ſome ſtrength, let them out three or four Hours in a Day, and take them in again, 'till they are big enough to defend themſelves from Vermin. Others put them out at firſt, and I think they do as well. One Gander will ſerve five Geeſe.

If you would fat Green Geeſe, you muſt ſhut them up when they are about a Month old, and they will be fat in about a Month more. Be ſure to let them have always by them in a ſmall Rack ſome fine Hay, which will much haſten their fatting. But for fatting of older Geeſe, 'tis commonly done when they are about ſix Months old, in or after Harveſt, when they have been in the Stubble Fields, from which Food ſome kill them which is a good way: But thoſe that have a mind to have them very fat, ſhut them up for a Fortnight or three Weeks, and feed them with Oats, ſpelted Beans, Barly-meal, or Ground Malt mixed with Milk. But in fatting of all Water-Fowl you may obſerve that they uſually ſit with their Bills on their Rumps, where they ſuck out moſt of their Moiſture, and Fatneſs, at a ſmall Bunch of Feathers which you ſhall find ſtanding upright on their Rumps, and always moiſt, with which they trim their Feathers which makes them oily and ſlippery more than other Fowl's Feathers are, that the Water may ſlip off them, which if cut away cloſe, will make them fat in leſs time, and with leſs Meat than otherwiſe. Geeſe will likewiſe feed on, and fatten well with Carrots cut ſmall and given them,

In ſome Countries they ſhear their Geeſe for their Feathers, and ſome pull them twice a Year; but this latter way is more injurious to them, and therefore 'tis better ſtaying 'till Moulting-time, and 'till their Death for their Feathers.

Chap. XIII. *Of Ducks and other Water-Fowl.*

TAme *Ducks* are very neceſſary for the Huſbandman's Yard, in that they require no charge in keeping; they live on loſt Corn, Worms, Snails, *&c.* for which reaſon they are very good for Gardens. Once in a Year they are very great Layers of Eggs, eſpecially a Sort of Duck that turns up the Bill more than the common Kind; and when they ſit they need little Attendance, except to let them have a little Barly or Offal-Corn and Water near them, that they may not ſtraggle far from their Neſt to chill their Eggs. For the ordering of their Young, 'tis much the ſame way with that of *Geeſe.* They are reckoned to be better hatched under a Hen than a Duck; becauſe while they are Young, the Hen will not lead them ſo much into the Water. Some reckon it very good to cut off the Feathers of their Rumps; becauſe when their Tails are wet, it often occaſions their drowning. As to the fatting of them, you may do it in three Weeks time, by giving of them any kind of Corn, or Grain, and good Store of Water. Ground Malt wet with Milk or Water is beſt.

If you would preſerve wild Ducks, Teal, Widgeon, Shell-ducks, *&c.* you ſhould have a Place walled in with a Pond in it, that hath good ſhelter, upon ſome Iſland, or Place near it, that the Duck may hide her Eggs from the Drake, who will ſuck them if he finds them.

There is likewiſe a Sort of Ducks called *Decoy-Ducks*, that will bring whole Flights of Fowl to their Retirements, where are Conveniencies made for the Catching of them; a Deſcription of which I ſhall leave to my ſecond Volume.

Chap. XIV. *Of Turkeys.*

T*Urkeys* are a Fowl that proſpers very well in open Countries, where there is not much ſhelter to harbour Vermin to deſtroy them; for they are ſubject to ramble. The Hens likewiſe are ſo negligent of their Young, that whilſt they have one to follow them, they never take any care of the reſt; and therefore there muſt be a great deal of care taken of them while they are Young to watch them, and to keep them warm, they being an extreme chill Bird. But ſome, where they have a Conveniency of a ſmall Covert near their Houſe, let them take their Liberty, and ſeek their own Neſts; but 'tis only in ſome particular Places that they do well with ſuch Management. I knew a Gentleman that had a Hen-Turkey of the wild Kind from *Virginia*; of which, and an *Engliſh* Cock, he raiſed a very fine Breed, that Bred wild in the Fields, and always became tame when grown up; they were a very hardy Breed, and much larger than ours, and reared their Young ones without any Care or Trouble, breeding much better than our *Engliſh*.

If you keep them with Corn, they are very great Feeders, and will devour a great deal; but if left to their Liberty when grown up they will get their own Livings without either Trouble or Charges, by feeding on Herbs, Seeds, *&c.*

Turkeys being very apt to ſtraggle will often be laying their Eggs in ſecret Places; and therefore the common Sort of them muſt be often watched, and made to lay at home. They begin to lay in *March*, and will ſit in *April*. Eleven or Thirteen Eggs are the moſt they ſhould ſit on. They hatch in between twenty five and thirty Days: And when they have hatched their Brood, be ſure to keep the Young ones warm; for the leaſt Cold kills them: Feed them either with Curds or green, freſh Cheeſe cut in ſmall Pieces. Let their drink be new Milk, or Milk and Water. Some give them Oatmeal and Milk boiled thick together, into which they put ſome Wormwood chopp'd ſmall, and ſometimes Eggs boiled hard, and cut in little Pieces. You muſt feed them often, for the Hen will not take much care of them, and when they have gotten ſome ſtrength, feed them abroad in ſome cloſe walled Place, where they cannot ſtray, and do not let them out till the Dew is off the Graſs, taking care to have them in again before Night, becauſe the Dew is very prejudicial to them.

For the fatting of Turkeys, ſodden Barly is very excellent, or ſodden Oats for the firſt Fortnight, and for another Fortnight, cram them as you do Capons. They are only to be crammed in a Morning, which muſt be given to them warm, and let out all day, being ſometimes fed with Corn while out; becauſe, being a ſullen Bird, they are apt elſe not to fat ſo kindly. Their Eggs are eſteemed very wholſome, and a great Reſtorer of Nature.

Chap. XV. *Of Pigeons.*

PIgeons or *Doves* are of ſeveral Sorts, both the wild and tame Kind, as Wood-pigeons, Rock-pigeons, Stock or Ring-doves, Turtle-doves, Dove-coat-pigeons, and ſeveral Sorts of tame Pigeons that are commonly fed by hand, and kept for the largeneſs of their Bodies, Beauty and Diverſity of their Colours. They breed almoſt every Month of the Year. We ſhall only treat here of ſuch as are or may be kept in Dove-coats, which bring a conſiderable Advantage to their Owners, with little Coſt or Trouble, only the feeding of them in Froſt or Snowy Weather, when nothing is to be had abroad; and about Midſummer, before Peaſe are ripe, which Time is uſually called *Benting-time*, becauſe then Neceſſity forceth them to feed on Bents, or Seeds of Bent-graſs; about which time they uſually have a great many Eggs and young Ones, which will be ſtarved if they are not helped. But Pigeons thrive beſt in open Countries, becauſe there generally is the moſt Corn: And the Gunners cannot get behind a Hedge to ſhoot them, eſpecially in ſuch Countries as they ſow a great many Gray-peaſe and Horſe-beans in; for they are ſowed the firſt of any Sort of Grain; their early feeding on which occaſions them to be forwarder in breeding than in other Places.

There is nothing the Pigeons more affect than Salt; for they will pick the Mortar out of the Joints of Stones or Brick-walls meerly for the Saltneſs thereof; therefore many give them as often as need requires, a Lump of Salt which they uſually call a Salt-cat, made for that Purpoſe at the Salterns, which makes the Pigeons much affect the Place. If Lime be mixed with Sand, Loam, and a little Salt put to it, and laid near, or put into the Pigeons-houſe, they will delight much to pick it: But it muſt not be made ſo ſtrong as common Mortar.

Where I formerly liv'd, I got a Pair of Ring-Dove's Eggs, and hatched them under a tame Pigeon, and they lived with the Pigeons, and bred much better than the Pigeons, that in a little time I had great Increaſe of them; ſo that I believe I might have ſtocked a Dove-coat with them. They are much better than any other Sort of Pigeons, for the Largeneſs of their Bodies and their Hardineſs; and in Winter-time they will live upon Ivy-berries, Turneps, and a great many other things that Pigeons will not. But being oblig'd to remove my Habitation, I have not ſince been able to make a thorough Experiment of them. I ſuppoſe Turtle-Doves will do the ſame, becauſe I have often ſeen in the Road going to *Epſom* near *Non-ſuch* Park, among a Flock of Pigeons that is commonly thereabouts (which I ſuppoſe belongs to ſome Gentleman near that Place) a great many of that Sort with them, and are as tame as the Pigeons. Pigeons are ſometimes apt to be ſcabby on the Backs and Breaſts, which Diſtemper will kill the young ones out-right; and makes the old Ones ſo faint that they cannot take their flights to procure Meat, which ſtarves them by degrees, ſo that whole Dove-coats are often deſtroyed with it. To cure which Diſtemper,

Take a Quartern of Bay-ſalt, and as much common Salt, a Pound of Fennel-ſeed, a Pound of Dill-ſeed, as much Cummin-ſeed, and an Ounce or two of Aſſa-fœtida: Mix all theſe together with a little Wheat-flour, and ſome fine worked Clay; when it is well beat together, put it into two Pots, and bake them well in an Oven; and when they are cold, lay them long-ways on the Stand or Table in the Dove-houſe.

Chap. XVI. *Of Swans.*

S*Wans* are commonly kept for their Statelineſs, and Beauty, tho' they are very uſeful to keep Ponds and Rivers clear of Weeds; upon which, and Graſs they only feed, and not upon Fiſh, as many pretend, and are neither chargeable nor troubleſome to keep, if you have but room enough for them. The young Cignets are extraordinary good Meat, if fatted with Oats, their Fleſh being the beſt of all Water-fowl; but if fed with Weeds, they taſte fiſhy; therefore the beſt way is to put them where there is a good Quantity of Weeds, and to get them as ſat as you can with them, and then to feed them for three Weeks or a Month, with Oats, put in a Trough in Water. But they being a large Fowl muſt not be kept in a ſtrait Place, becauſe their Dung will taint them; but in ſome incloſed Pond where they may have room to come aſhore, and plume themſelves.

They commonly lay ſeven or eight Eggs, ſometimes ten or eleven, but ſeldom have patience to hatch them all; tho' I have known a Swan to have nine young Ones; but their common Number is four or five. The Hen ſits about ſix Weeks; and if while ſhe ſits you ſet ſome Oats once in a day in a Trough in the Water ſome-where near her; if ſhe have not plenty of Weeds juſt at hand, it will do well to prevent her leaving of her Eggs; and likewiſe if you ſet up ſome Boughs or other ſhelter to preſerve her from the Heat of the Sun.

Chap. XVII. *Of Peacocks.*

PEacocks are uſually kept for their Beauty and Comelineſs, and more for Variety and Pleaſure than Profit, except near great Towns where many Cuſtomers may be found to purchaſe them. They are beneficial to the Places where they are kept, by clearing of them from Snakes, Adders, Efts, *&c.* upon which they will live. The young Ones, ſome ſay, are extraordinary Meat; but then they ſhould be kept up three Weeks or a Month before they are killed; and fed with Corn, and not ſuffer'd to feed on their uſual Food.

Chap. XVIII. *Of Pheaſants, Partridge and Quail.*

THeſe being troubleſome and chargeable to keep, becauſe the young ones muſt for the firſt Month be fed with Ants-Eggs, and for the coſt of the places that ſhould be made to keep them in, (tho' ſome make advantage of them near *London* to ſell to Gentlemen as Rarities; eſpecially thoſe that have the white Breed, and ſuch as are very fine colour'd, having Rooms and Places made on purpoſe to keep them in;) I ſhall recommend them rather to Gentlemen than to the Farmer; and proceed to conſider his Advantage from that of Inſects.

For over and above his Stock of Cattle and Fowl, wherewith the Country-farmer is repleniſhed, there are ſeveral Sorts of Inſects that being judiciouſly and carefully manag'd, may bring into the Huſbandman's Purſe no ſmall Advantage. Amongſt many of them that are uſeful in ſeveral Countries, and to ſeveral Ends and Purpoſes, we have here only two that are familiarly known and preſerved anongſt us, which is the Bee and the Silkworm, of which we ſhall treat apart; and firſt

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Chap. XIX. *Of Bees.*

BEes are to be valued for their Profit, and the ſmall Trouble that attends them, there being no Fruit nor Flower, no Wood nor Foreſt, no Hill nor Dale, no fruitful nor unfruitful Soil, but what affords them matter to work upon; nor is there any time wherein they are idle, except the extremeſt Cold and wet Seaſon.

A convenient and neceſſary Place ought to be made choice of for your *Apiary*, or Bee-garden, to place your Hives in; which, if 'tis near the Houſe, is the moſt convenient for to look after at ſwarming Times, and on other Occaſions: Let it be ſecurely fenced from all Cattle, eſpecially Hogs, and from all Sorts of Fowl, whoſe Dung is very prejudicial to them, and be well defended from high Winds on every ſide with ſuch Fences as may let the Sun to them; but the North ſhould be ſhelter'd with ſome high Buildings or Brick-wall that *Apiary.*

is ſolid, that it may keep the Wind from coming through it as well as over it: That Place being beſt for them, that is moſt expoſed to the South, and where they may have the beſt opportunity to ſettle at their Hives, when they come loaden Home.

It is alſo very convenient to plant ſeveral Trees and Shrubs, at ſome reaſonable Diſtance, near Home, for them to pitch on at their ſwarming, that they may not be in danger of being loſt for want of a Lighting-place. Limes, Phyllyreas, Sycamore-Trees, and Firs are particularly good to be planted near them; becauſe from their Flowers they draw a great deal of Honey and Wax.

Seats or Stools.

The Place being fitted, the Seats to ſet the Hives on are to be provided; which, whether they be Stools or Benches, muſt be ſet a little ſhelving, that the Rain may neither run into the Hive, nor ſtay at the Door.

'Tis not reckon'd good to ſet any Hives on a Bench; becauſe in Winter it may cauſe the Bees to fight, by going into one another's Houſes, which they may ſometimes miſtake for their own; and therefore ſome eſteem ſingle Stools beſt, which are to be ſet at about two Foot diſtance from one another, and to be ſupported with four Legs, about twelve or fourteen Inches from the Ground. For their ſize they ſhould not be above half an Inch or an Inch bigger than the Hive, ſave only before, where there ought to be the Space of three or four Inches, that the Bees may have room enough to light upon it. The beſt Stools are of Wood. Thoſe of Stone are too hot in Summer, and too cold in Winter.

The Stools ſhould be ſet towards the South, or rather a Point or two to the Weſt, that the Hive may ſomewhat break the Eaſt-wind from the Door, and ſtand in ſtraight Rows from Weſt to Eaſt.

A Cot or Houſe.

Mr. *Worlidge* propoſes to make for every Hive of Bees, you intend to keep, a Cot or Houſe of about two Foot ſquare, and two Foot and a half high, ſet on four Legs, about ten Inches above Ground, and five or ſix Inches within the Ground, and cover'd with Boards or Tyles to caſt off the Rain, the Back or North-ſide being cloſed up very cloſe, and the Eaſt and Weſt-ſides to have Doors to open and ſhut at pleaſure, with Haſps to them, and at the Face or South ſide to have a Falling-door that may come about half way down, which is to be elevated at pleaſure, and ſerves in Summer for a Pent-houſe; not only to beat off the Rain from the Hives, but to defend them from the extreme Heat of the Sun, which is apt to melt their Honey. The other lower half ſhould have two ſmall Doors to open to either hand, which will ſerve to defend the Holes of the Hives from injurious Winds. When the Winter approaches, and the cold Winds are like to injure the Bees, you may then faſten all the Doors, which will defend the Bees from the Extremes of Heat and Cold, both which are injurious to them.

In Winter if you find them ſtand too cold, you may ſtuff Straw within the Doors to keep them warm; but the Extremity of Cold doth not do them ſo much Injury as Wet; which theſe Caſes beſt preſerve them from. They likewiſe prevent the Bees getting abroad upon every Sun-ſhine-day, becauſe the Hives ſtand ſix or eight Inches within the Doors, which makes them dark, and the Bees inſenſible of a ſmall Heat; when after the common way of Stools or Benches, the Sun caſts its Rays to their Doors; which Warmth and Light together excites them forth to the Expence of their Proviſion, and the Loſs of their Lives, as is evident by frequent Experience; the mildeſt and the cleareſt Winters deſtroying or ſtarving the moſt Bees; whereas the coldeſt and moſt frofty Winters beſt preſerve them.

In Spring, as ſoon as the Willow or Withy Bloſſoms appear, you may open the under Doors, that the Light and Warmth of the Sun and Air may encourage them to work; or elſe you will hinder their early breeding, and make them ſlothful.

Hives. Several Sorts of *Hives* are uſed in ſeveral Countries; but the general Sort uſed in *England* is Wicker-hives made of Privet; Willow, or Harl daub'd with Cow-dung temper'd with Duſt, Aſhes, or Sand; or Hives made with Straw bound with Brambles: Some out of Curioſity that they may ſee the Bees work, have them made of Wood with Glaſs, but they are very cold; ſo that Bees do not thrive well in them. Others have placed double Hives one by another, and ſome upon the tops of others, that ſo by the taking of one of them away they may leave the other for the Bees without driving or killing of them: But as I cannot find any of theſe Experiments brought to perfection; ſo I ſhall refer the treating of them, 'till I can get a full Account of ſome experimental Progreſs that is made in them.

Form. The beſt Hives, and thoſe that are the moſt in uſe and warmeſt, are the Straw-hives; the bigneſs of which ſhould be of between five and ſeven Gallons, of a round Form, rather broad than high; but you ought to have of each ſize, that you may ſuit your Swarms to them according as they are bigger or leſſer; and where you deſign to multiply your Stock, make uſe of the ſmall Hives, and of the larger when you deſire a great deal of Honey.

Trimming the Hives. Your Hives being thus made, you muſt dreſs them after this manner: Take off all the ſtaring Straws, Twigs and Jaggs, that are offenſive in the Hive, and make them as ſmooth as poſſible. If you need but few Hives, you may prune them with a Knife: If many, ſinge, and rub them with a Piece of Brimſtone.

Spleets. Your Hive being pruned, put in your *Spleets*, three or four of them, as the largeneſs of your Hive ſhall require: The upper Ends whereof ſet together at the Top of the Hive, and the lower faſten about a Handful above the Skirt. Beſides theſe Spleets the

Straw-hive ſhould have four other Spleets driven up into the Skirts to keep the Hive from ſinking when it is loaded; two of which are the two Door-poſts, the other two are hind Poſts ſet at equal Diſtances,

Dreſſing. In Swarming-time the Hives that you are minded to uſe, rub with ſweet Herbs, as Thyme, Baum, Savoury, Marjoram, Fennel, Hyſſop, Bean-tops, *&c.* and when the Swarm is ſettled, take a Branch of the Tree, whereon they pitch, and wipe the Hive clean with it, and wet the Inſide of the Hive with a little Honey, Mead, Salt and Water, ſmall Beer, or Honey and Milk, or Sugar and Milk.

In the next place your Hives muſt be kept cloſe for defence of your Bees, firſt, from the Cold by mixing of Cow-dung with Lime or Aſhes, and with Sand, with which you muſt ſtop up the Edges of the Hive round, and againſt Winter put a Wicket of a ſmall Piece of Wood, in which are three or four Notches cut juſt big enough for the Bees to go in and out at, that no Vermin may get into them.

Swarming. If the Spring be mild, calm, and ſhowering, 'tis good for Swarms; and they will be the earlier: But if it proves a cold, dry, windy Spring, then will there be but few Swarms, and thoſe alſo backward. *Dry* Weather makes plenty of Honey, and *Moiſt* of Swarms.

About the Middle of *May* in an early Spring, you muſt begin to look after them, and obſerve what you can of the uſual Signs, that precede their Swarming, that you may be the more watchful over thoſe that require it. *Hives.* When the *Hives* are full (before which they will never ſwarm) they will caſt out their Drones, altho' they be not quite grown, and the Bees will hover about the Doors. In cold Evenings and Mornings there will be a Moiſture or Sweating upon the Stool, and they will continually be running up and down haſtily, and lie out in ſultry Evenings and Mornings, and go in again when the Air is clear

If the Weather be warm and calm, the Bees delight to riſe; but eſpecially in a hot gleam after a Shower or gloomy Cloud hath ſent them Home together. Then ſometimes they gather together without at the Door not only upon the Stool, but the Hive alſo: Where when you ſee them begin to hang in Swarming-time, and not before, you may be ſure they will preſently riſe if the Weather hold.

To lie forth continually under the Stool or behind the Hive, eſpecially towards the Middle of *June* is a ſign or cauſe of not ſwarming: For when they have once taken to lie forth, the Hive will always ſeem empty, as tho' they wanted Company, and they will then have no mind to ſwarm.

Much ſtormy and windy Weather alſo will not ſuffer them to ſwarm when they are ready, and that makes them lie out; and the longer they lie out, the more unwilling they are to ſwarm.

Another cauſe of lying out is continual hot and dry Weather, eſpecially after the Solſtice; which cauſing Plenty of Honey both in Plants and Dews, their Minds are ſo ſet upon that their chief delight, that they have do leiſure to ſwarm, altho' they might moſt ſafely come abroad in ſuch Weather.

To make them ſwarm.

But to make them ſwarm, ſome keep the Hives as cool as may be, by watering and ſhadowing both them and the Place where they ſtand, and then inlarging of the Door to give them air, they move the Cluſter gently with their Bruſh, and drive them in.

If yet they lie out and ſwarm not, then the next calm warm day about Noon, while the Sun ſhineth; put in the better part with your Bruſh, and the reſt gently ſweep away from the Stool, not ſuffering of 'em to cluſter again. Theſe riſing in the calm and heat of the Sun, by their noiſe, as tho' they were ſwarming, will make the other come forth perhaps unto them, and ſo they may ſwarm.

Divers other ways have been attempted to cauſe Bees to ſwarm, as by placing a large Pewter-platter under the Cluſter of Bees as they hang out in the Heat of the Sun, ſo as it may ſtrongly reflect the Heat upon them, which will provoke them to ſwarm.

If none of theſe ways will cauſe them to ſwarm, but that they lie forth ſtill near the Hive enough to let them in, and cloom up the Skirts all but the Door: If this ſucceed not, there is no Remedy.

After-ſwarms.

The Signs of After-ſwarms are more certain: When the prime Swarm is gone, about the eighth or tenth Evening after when another Brood is ready, and again hath over-filled the Hive: In the Morning before they ſwarm they will come down near the Stool, and there they call one another, and at the time of ſwarming they deſcend to the Stool, where anſwering one another in more earneſt Manner with thick and ſhriller Notes, the Multitude come forth in great haſte, *&c.*

If the prime Swarm be broken, the ſecond will both caſt and ſwarm the ſooner, it may be the next day, and after that a third, and ſometimes a fourth, but all uſually within a Fortnight: Sometimes alſo a Swarm will caſt another that Year.

When the Swarm is riſen, 'tis the uſual Cuſtom to make a noiſe with a Pan, Kettle, Mortar, *&c.* but ſome reckon it an inſignificant Ceremony, and others eſteem it prejudicial. But if they are like to be gone, caſt Duſt or Sand amongſt them, to make them come down.

When your Swarm hath made choice of a Lighting-place, you ſhall quickly ſee them knit together into a Cluſter: When they are fully ſetled, and the Cluſter hath been a while at the biggeſt, then hive them. And having in Store ſeveral Hives of ſeveral Bigneſſes, make choice of one that the Bees may go near to fill it that Year, but rather under-hive a ſwarm, than over-hive them, and rub the Hive with ſweet Herbs as is before directed.

Hiving them. Let the Hiver drink a Cup of good Beer, and waſh his Hands and Face therewith, or being otherwiſe defended, if the Bees hang upon a Bough, ſhake them into the Hive, and ſet the ſame upon a Mantle or Cloth on the Ground, as is uſual; or you may cut off the Bough if it be ſmall, and lay it on the Mantle or Cloth, and ſet the Hive over it, which is the better way.

If they light near the Ground, lay your Cloth under them, and ſhake them down, and place the Hive over them; and ſuch Bees as gather together without the Hive, wipe them gently with your Bruſh towards the Hive: And if they take to any other Place than the Hive, wipe them off gently with your Bruſh, and rub the Place with Wormwood, Nettles, May-weed, *&c.* Then ſet the Swarm as near as you can to the Lighting-place, 'till all be quiet; every one knowing his own Houſe.

Swarm parting. If the Swarms part, and light in ſight of one another, let alone the greater, and diſturb the leſſer Part, and they will fly to their Fellows: But if not in ſight, Hive them both in two ſeveral Hives, and bring them together; ſhaking the Bees out of one Hive on the Mantle, whereon the other Hive ſtands, and place the other full Hive on them, and they will all take to it.

If it happen that your Swarm come late after the Middle of *June*, and that they are ſmall, under the Quantity of a Peck; then put two or three of them together, whether, they riſe the ſame day, or in divers; for by this uniting they will labour carefully, and gather Store of Honey, and ſtoutly defend themſelves againſt all Enemies. The Manner of uniting of them is thus:

In the Evening when it waxeth dark, having ſpread a Mantle on the Ground near unto the Stool, where this united Swarm ſhall ſtand, ſet a Pair of Reſts, or two Supporters for the Hive; knock down the Hive out of which you intend to remove your

Bees upon the Reſt; then lift up the Hive a little, and clapping of it between your Hands to get out the Bees that ſtick in it, lay it down ſide-ways by the Bees, and ſet the Stock or Swarm to which you would add them, upon the Reſts or Supporters over them; and they will forthwith aſcend into the Hive; thoſe that remain in the empty Hive, by clapping it will haſten after their Companions. When you have gotten them all in, either that Night or early the next Morning, place the Hive on the Stool, *&c.*

Some reckon it better to place the Hive wherein you have newly put your Swarm you intend to drive into another, in a place that the ſkirts may be uppermoſt, and ſet the other upon it, binding them about the ſkirts with a Towel: And ſo let them ſtand 'till the Morning, and the Bees will all aſcend, that you may the next Morning ſet the Receiver on a Stool: And thus may you put three or four Swarms together: But obſerve to unite them the ſame Evening, or the next at fartheſt, that they ſwarm; leſt having made Combs, they are the more unwilling to part from them.

Bees ſtinging.

In theſe ſeveral ways of dealing with Bees, 'tis good to defend ones ſelf as well as may be againſt their Stings; the ſecureſt way of doing of which, is to have a Net knit with ſo ſmall Maſhes, that a Bee cannot get through; and of fine Thread or Silk large enough to come over your Hat, and to lie down to the Collar of your Doublet; through which you may perfectly ſee what you do, without any danger, having alſo on your Hands a good Pair of Gloves; Woollen ones are the beſt.

If a Bee happen to catch you unawares, pull out the Sting as ſoon as you can, and take a Piece of Iron and heat it in the Fire; or for want of that, take a live Coal, and hold it as near, and as long to the Place as you can poſſibly endure it, and it will attract the fiery Venom, and afterwards anoint it with ſome Honey or Mithridate.

As ſoon as a Swarm hath enter'd its Hive, they immediately (if the Weather will permit) gather Wax, and build Combs; that in a few days time there will be large and compleat Combs. They lie ſo thick about them, that it is impoſſible one quarter of them can be imploy'd at once, until the Combs are brought to a conſiderable length, and then a great part of them may be employ'd in filling them, and the reſt in finiſhing their Cells or Combs.

Their Number towards the End of Summer begins to leſſen for in their Proſperity at Swarming-time, and ſhortly after they are far more in Number, than in the Autumn or Winter, as you may eaſily diſcern between the Quantity and Number of a Swarm, and thoſe you kill when you take them; for the Bees of the laſt years breed do now by degrees waſt and periſh by their extraordinary labour, their Wings decay and fail them; ſo that a Year, with ſome advantage, is the uſual age of a Bee, and the young only of the laſt Spring ſurvive and preſerve the kind till the next.

There are ſeveral things that are injurious to Bees, and much hinder their Proſperity, if not prevented.

Enemies to Bees.

1. *Noiſe*, which may in part be remedied by the Situation of the Apiary free from the noiſe of Carts, Coaches, Bells, Echoes, *&c.*

2. *Smoak*, where Land hath been Burn-beaten near unto an Apiary, and the Wind hath brought the Smoak towards it, a great many of the Bees have been killed; which is the reaſon they will not thrive in or near great Towns.

3. *Ill Smells* are very offenſive to them.

4. *Ill Weather*, as Wind, Rain, Cold, Heat, *&c.* which is prevented by the Situation and Fencing of the Apiary, and ordering of the Stocks as before.

5. The *Mice*, *Birds*, and other devouring Creatures which are to be deſtroyed.

6. *Noiſome Creatures*, as Toads, Frogs, Snails, Spiders, Moths, Ants, *&c.* which you muſt endeavour to keep from them, and cleanſe alſo the Hives ever and anon from theſe Vermin.

7. *Hornets and Waſps* in ſuch years wherein they abound, prove great Enemies to the Bees, by robbing them of their Honey; they are deſtroyed by placing near the Door of the Hive a Glaſs Vial half full of Beer, Cyder, or any ſuch thing, if ſome Sugar be added to it, it will do the better.

8. Bees themſelves prove the greateſt Enemies both by *fighting* and *robbing*. Several occaſions provoke the Bees to fight; which, if the Battle be but newly begun, may be hindred by ſtopping up the Hive cloſe: but if it be gone ſo far that moſt of the Bees are out, the caſting of Duſt among them was the ancient way.

Removing of Bees.

The beſt time to remove an old Stock is a little before or a little after *Michaelmas*; or, if you have overſlipt that time, then about the end of *February*, or beginning of *March*, before they go much abroad, leſt it prevent their ſwarming. You may remove them at any time in the Winter, but not ſo well as in the forementioned Seaſons. The beſt time of the day to do it is in the Evening, next after Hiving, let the Weather be fair, and do it in the Evening when the Bees are quiet; the beſt way of doing of which is thus:

Take a Board about the breadth of the bottom of the Hive you intend to remove, and in the Evening, or two or three Evenings before, lift it up and bruſh the Bees that are on the Stool forward, let the Board be a little ſupported by two Ledges, to prevent the Death of the Bees on the Stool. On this Board ſet the Stock, and ſo let them ſtand till you remove them; when you come to remove them, ſtop up the Door of the Hive, and ſet the Board whereon the Hive ſtandeth, on a Hand-barrow, and carry them to the place you intend.

Feeding of Bees.

The feeding of Bees is of little uſe; firſt, becauſe the Bees that have not a profitable ſtock of Honey to ſerve them over the Winter, are not fit to Keep: and then Becauſe they that are Bee-maſters, and have not care enough of them to keep them from ſpending of that Stock they have in Winter-time, muſt not expect to reap any conſiderable Advantage by them; and it may be preſumed will never take ſo much Pains and Care as is required in feeding of them.

There are ſome Stocks of Bees in the Spring time that may ſeem worthy of our care to preſerve, *viz.* Such as having but a ſmall Stock of Honey, and a good Quantity of Bees, by means of a cold, dry, unſeaſonable Spring, cannot make ſuch timely Proviſion as in other Years they might have done, yet in all probability may prove an excellent Stock, and may be worth our aſſiſtance. Food may be afforded to them ſeveral ways, but the beſt is by ſmall Canes or Troughs convey'd into their Hives, into which you may put the Food you give them: It muſt be daily continu'd till the Spring-Seaſon affords them eaſe and Proviſion abroad, becauſe at that time their Combs are full of young Bees.

Food.

Of all Food Honey is the beſt and moſt natural, which will go the farther, if it is mixed well with a moderate Proportion of good Sweet-wort. Some preſcribe Toaſts of Bread ſopped in ſtrong Ale, and put into the Bee-hive, whereof they will not leave one Crum remaining; ſome alſo adviſe to put into the Hive dry Meat, or Flour of Beans; others Bay-ſalt, roaſted Apples, *&c.* which are very good, eſpecially Salt: which if ſome were mixed with Water, and always ſet near them, it might do well, it being certain, that Bees near the Sea always thrive the beſt; which ſome attribute to their drinking of Salt-water, that they fly (ſay ſome) many Miles to get.

Improvement of Bees.

Mr. *Worlidge* propoſes for the improvement of Bees, to take a handful of Baum, one Dram of

Camphire, half a Dram of Muſk diſſolved in Roſe-water, as much yellow Bees-wax as is ſufficient, Oyl of Roſes as much; ſtamp the Baum and Camphire very well, and put them in the melted Wax with the Oyl of Roſes, and ſo make it up into a Maſs, letting of it Cool before you put in the Muſk; for otherwiſe the Heat will fume away moſt of the Scent.

Take of this maſs ſo much as a Hazle-nut, and leave it within the Bee-hive; it will (as he ſays) much increaſe the number of the Bees, and you ſhall alſo find both of Honey and Wax three times more profit, than otherwiſe you ſhould have had.

A great thing to advance your Bees is the having of Fields near you, ſow'd with Brank, Coleſeed, or Turneps, from which they will draw great Quantities of Honey. Beans alſo are good for them.

Profit of Bees.

As the chief aim of the Keeper of Bees is an Advantage by their Honey and Wax; ſo many have endeavoured to find out ſome way to reap the profit of Bees without deſtroying them. One way that has been uſed for this purpoſe is *driving* of them after this manner. In *September*, or any time after they have done breeding (elſe the Honey will be corrupted by the young Bees in the Combs) place the Hive you intend to take, with the bottom upwards, between three or four Stakes, and ſet the Hive you intend to drive the Bees into, over the ſame as before was directed, in the uniting of Swarms; then often clap the under Hive between your Hands in the Evening; and ſo let them ſtand till Morning: and then clap it again, and get as many Bees out as you can, which will repair to the other Hive. This way is ſomething troubleſome to the unexperienced; yet beneficial in ſuch Caſes, where you have a great Stock of Honey and few Bees in one Hive, and a ſmall Stock of Honey in another: by which means you ſave the Lives

Driving of Bees.

Lives of your Bees, which will gladly exchange their hungry Habitation for a more plentiful.

Profit of Bees. But theſe ways have altogether fail'd the Deſigns of the Undertakers, as I ſaid before. So I ſhall at preſent only deſcribe the common uſage, which is the taking of the Combs by killing of the Bees, which muſt certainly be the only way of ordering of them; becauſe 'tis impoſſible for them to live if you deprive them of their Food; and therefore about the latter end of *Auguſt* conſider with your ſelf what Stalls you will keep, and what you will kill; the beſt Swarms to keep are thoſe of one or two Years ſtanding; and thoſe of three or four, which by reaſon of their Swarming the laſt Summer, are full of Bees, and are the moſt likely to be the beſt: but thoſe of that Age which have caſt Hives, not being like to continue, are to be taken, as are alſo poor Swarms not worth the feeding, and all light Stocks, and ſuch as do not carry out their Droſs, and drive away the Drones in good time; alſo thoſe whom the Robbers eaſily aſſault, are to be ſuſpected; and if their Combs be once broken, delay not their taking: and alſo all Stalls of three Years Old or upward that have miſs'd ſwarming two Years together, eſpecially thoſe that have lain out the Summer before and did not caſt the laſt Summer: for ſuch do ſeldom proſper; and therefore 'tis better to take them while they are good, than in a vain hope of increaſe to keep them till they periſh. Neither is it ſafe to truſt to any after they have ſtood five Years and upwards, that have miſs'd ſwarming two Years together, unleſs it be ſome ſpecial Sort of Bees, which always keep themſelves in Heart: ſuch as theſe may be kept nine or ten Years. Likewiſe if you have any that are very full of Honey, as ſome Years ſome will be, even down to the Stool, one ſuch Stall is worth three or four, and therefore take them in their Seaſon.

Having made choice of your Stalls to be taken, two or three Hours before Sun-ſetting, dig a hole in the Ground of about nine Inches deep, and almoſt as wide as the Hive-ſkirts, laying the ſmall Earth round about the Brims; then having a little Stick ſlit at one end, and ſtripp'd at the other, take a Brimſtone-match five or ſix Inches long, and about the bigneſs of your little Finger, and making it faſt in the ſlit, ſtick it in the middle or ſide of the Hole; ſo that the top of the Match may ſtand even with the brim of the Pit, or within one Inch of it, and then ſet another by it dreſſed after the ſame manner, if the firſt be not ſufficient. When you have fired the Matches at the upper end, ſet over the Hive, and preſently ſhut it cloſe at the bottom with the ſmall Earth, that none of the Smoak may come forth; ſo ſhall you have the Bees dead in a quarter of an Hour.

The Hive being taken and houſed, lay it ſoftly on the Ground upon the ſides not the Edges of the Combs; and looſen the ends of the ſplints with your Finger, and the Edges of the Combs where they ſtick to the ſides of the Hive, with a wooden Slice take them out one after another, and having wiped off the half dead Bees with a Gooſe-feather, break the Combs preſently while they are warm into three Parts.

The Honey which firſt flows of it ſelf from the Combs is called *Virgin-honey*, (as is alſo the Honey which comes from the firſt Years Swarm.) This is the beſt and fineſt Honey, being more cryſtalline and of a finer Taſte than that which is ſqueezed out of the Combs, and ſo may be kept for particular Uſes, or for the making of the fineſt Mead, for the ordering of which I ſhall refer you to my Treatiſe of *Engliſh Liquors*; and ſhall conclude at preſent with giving you ſome Account of the way of ordering of your Honey and Wax, with the Virtues of them, that you may be the more ſenſible of the Advantages that acrue to Mankind by this ſmall Inſect.

When your Combs have run out as much as they they will, put it up warm into Pots by it ſelf; this being the fineſt Honey, as I ſaid before; and it will for two or three days time work up a Scum of courſe Wax, Droſs, and other ſtuff, which muſt be taken off. The other Honey which is the courſer Sort, you muſt get from the Combs, by preſſing of them, which you may Pot alſo, except what you deſign for the preſent making Metheglin with; which being done, what remains put into a Hair-bag and waſh in a Trough or other Veſſel to make Mead or Metheglin; and when the ſweetneſs is all waſhed out, being cruſhed dry, the Balls try for Wax.

The manner of ordering of which is as followeth:

Take the Wax and Droſs, and ſet it over the Fire in a Kettle, or other Veſſel that may eaſily contain it, and pour in ſo much Water as will make the Wax ſwim, that it may boil without burning, and for this reaſon while it is gently boiling over the Fire, ſtir it often; when it is throughly melted, take it off the Fire, and preſently pour it out of the Kettle into a Strainer of fine thin Linnen, or of twiſted Hair ready placed upon a Screw or Preſs, lay on the Cover and preſs out the Liquor (as long as any Wax comes) into a Kettle of cold Water, but firſt wet both the Bag and the Preſs to keep the Wax from Sticking: at the firſt cometh moſt Water, at the laſt moſt Droſs, and in the middle moſt Wax.

The Wax growing hard make it into Balls, ſqueezing out the Water with your Hand. Which when you have done, break all the Balls into Crums, and in a Kettle or Skillet ſet it over a ſoft Fire: While it is melting ſtir it and ſkim it with a Spoon wet in cold Water; and as ſoon as it is melted and ſcummed clean, take it off, and pour it into a Pan or Mould, beſmearing the bottom and ſide, firſt with Honey, (the Wax being as cool as it will run thro' a Linen Strainer:) when you come near the Bottom, pour it gently, till you ſee the Droſs come, which ſtrain into ſome other thing by it ſelf: and when it is cold, either try it again, or (having pared away the Bottom) keep it for uſe.

When the Wax is in the Pan or Mould, if there is any Froth remaining on the Top, blow it together at one ſide, and ſkim it off gently with a wet Spoon. This done, ſet not the Cake abroad where it may cool too haſtily, but put it in a warm Houſe not far from the Fire; and if it be a large Cake, cover it warm to keep the Top from cooling till the inward Heat be allay'd, and ſo let it ſtand, not moving of it till the Cake be Cold: if it ſtick, a little warming the Veſſel or Mould will looſen it; ſo that it will preſently ſlip out.

The Properties of good Wax are, that it is yellow, odoriferous or ſweet, fat, faſt or cloſe, light, pure, being void of any other matter. 'Tis always a ready Money Commodity, eſpecially *Engliſh* Wax which is much better than Foreign, and commonly ſells for about five or ſix Pound a Hundred; it being of extraordinary uſe both in Chirurgery and Phyſick; beſide the uſe that is made of it for Lights, the clearneſs and ſweetneſs of which makes it preferr'd before all other Sorts.

As to its Chirurgical or Phyſical Vertues, 'tis reckon'd a mean between Hot and Cold, between dry and moiſt, being the Ground of all Cerecloths and Salves, it mollifies the Sinews, ripens and reſolveth Ulcers, the Quantity of a Pea being ſwallowed down by Nurſes, diſſolveth the Milk curdled in the Breaſt. It's Oyl is of excellent Virtue to cure Wounds, be they never ſo large or deep (being before ſtitched up) in ten or twelve days at the moſt, and healeth ſmall Wounds in three or four days, by only anointing the Wound therewith: and applying a Cloth wet in the ſame ſtayeth the ſhedding of Hair, either on Head or Face, by anointing therewith. And 'tis as good for inward Diſeaſes, if you give one Dram at a time in White Wine, it will provoke Urine, help Stitches and Pains in the Loins, the Cold Gout and all other Griefs coming of cold.

Honey is little inferiour, either as to its benefit or uſefulneſs; 'tis of ſubtil parts; and therefore doth pierce as Oyl, and eaſily paſſes the Parts of the Body; it hath a Power to cleanſe, and ſome ſharpneſs withal; and therefore it openeth Obſtructions, and cleareth the Breaſt and Lungs of thoſe Humours that fall from the Head: it looſeneth the Belly, purgeth the foulneſs of the Body, and provoketh Urine; it nouriſheth very much, and breedeth good Blood; it prolongeth Life, and keepeth all things uncorrupted which are put into it; and therefore Phyſicians do temper therewith ſuch Medicines as they deſign to keep long. 'Tis good for ſuch as have eaten Muſhrooms, or drunk Poppies; it's an eminent Ingredient in the great Antidotes of Treacle and Mithridate, and is good againſt Pleuriſies, Phthiſicks, and other Diſeaſes of the Lungs. But 'tis for any Diſtemper much better to be taken clarified than raw, it being thereby made more nouriſhing, lighter of Digeſtion, and leſs laxative, as alſo leſs ſharp, *&c.*

Chap. XX. *Of Silk-worms.*

S*Ilk-worms* are another Inſect of great Advantage to the Farmer in other Countries, and might certainly be ſo in this Iſland; as well as in *New England*, *Virginia*, and even *Barbadoes* and *Jamaica*, without hindrance to any of their other Affairs. In *England* the great Obſtacle ſeems to be the want of Food for them. Mulberry Leaves being the only Food that I believe will Feed and Cheriſh them to advantage, tho' ſome have affirmed, That they will eat White-thorn, Lettice, Dandelion, Poplar, Plumb and Apple-tree Leaves, the certainty whereof I ſhall leave to be decided by Experience. Of Mulberries there are two Sorts, the Black and the White; the former ſort is the uſual Sort given to them in *England*: but the White is moſt eſteemed in Foreign Parts, there being very large Plantations of them raiſed for that purpoſe in all the Silk-Countries: it's Leaf is much finer than that of the Black, and therefore muſt be much better for the young Ones. I am apt to believe it nouriſhes them much better than the Black: but about the ordering of this Tree ſee my *Treatiſe of Trees* following.

About the beginning of *May* when the Mulberry begins to ſpread its Leaf is the time that the Silk-worms Eggs are, as it were by Nature, adapted for a releaſe from their Confinement. At which time, and not before, lay them in ſome Window in the Warm Sun, or carry them in a little Box between ſome pieces of Say, in ſome warm place about you, keeping them warm in the Night, they will ſoon appear. And when they are come out of the Shell, cut ſome Paper full of ſmall Holes, and lay over them, and over that ſome of the Young Mulberry Leaves, and they will eaſily find their way to their Food. After they are come to feeding, you may place them on Tables or Shelves at convenient diſtance according to the number of Worms that you have.

They are Sick four times in their feeding, the firſt commonly about twelve days after they are Hatched, and from that time to the end of every eight days, according to the Weather, and their good or ill uſage; during the time of their Sickneſs, which laſteth two or three days, you muſt Feed them but very little, only relieve ſuch of them as have paſt the Sickneſs before the reſt, and thoſe that ſhall not fall into their Sickneſs: at this time they grow clearer, ſhorter and thicker than they were before, and more drowſie.

Time of Feeding.

The whole time of their feeding is about nine Weeks, during which time you may feed them twice a day by laying the Leaves over them as it were to cover them, and they will ſoon find their way through them; and as they grow in ſtrength and bigneſs, ſo you may feed them more plentifully and often. It is good to let the Leaves be clear of Dew or Rain before you give them unto the Worms; you may keep them ſpread on a Table in caſe they be wet, you may gather and keep them two or three days without any great Inconveniency, and in caſe you live remote from Mulberry-trees, or the Weather be changeable.

Cleanſing of them.

You muſt obſerve to rid your Shelves often of their Dung, and the remainder of your Leaves, by removing of the Worms when they are faſt on the new Leaves laid them, for then may you remove eaſily the Worms with the Leaves: keeping clean the Shelves and the Room being the principal means to preſerve them. Likewiſe remember to keep the Room warm in cold and wet Weather, and to give them a little Air in hot Weather.

Let not the Room you keep them in be too near the Tiles on the Top of your Houſe, nor in any cold or moiſt Room below; but be ſure to avoid all extremes.

When they have fed as long as they are able, they look of a clear Amber or Freſh colour, and are then ready to go to work; at which time be ſure to give them what Air you can. Therefore 'tis then adviſed, that you make Arches between their Shelves with Heath made very clean, or with Branches of Roſemary, Stalks of Lavender, or ſuch like: whereupon the Worms will faſten themſelves, and make their bottoms, which in about fourteen days are finiſh'd.

But the beſt way is to make ſmall Cones of Paper, and place them with their ſharp end downward in Rows, in each of which put a Worm as they appear to you to be ready to go to work, and there will they finiſh their bottom more compleat, and with leſs waſte than any other way.

In their working the firſt day they make only a Web; the ſecond, they in this Web form their Caſes, and cover themſelves all over with Silk, the third day they are no longer ſeen, and the days following they thicken their Caſes, always by one end or thread which they never break off themſelves. Let them not any ways be diſturb'd in their work, that all the Silk in their Bellies may come out.

When they have finiſh'd their bottoms, which will be in about fourteen days; take ſo many as you intend for Breeders, and lay by themſelves, *viz.* the firſt done, and them that are the hardeſt, reddeſt, and beſt coloured muſt be choſen, and likewiſe as many Male as Female Caſes (which are diſcerned by this, that the Males are more pointed at both ends of the Caſes, and the Females more obtuſe at the ends, and bigger bellied) and that no Caſes be taken, but ſuch as you may hear the Worms roll in: and then the Worms within will eat their way out in four or five days time; and when they come forth 'tis adviſed to put them together on a piece of old Say, Grogram, Velvet, whited brown Paper, or the like, and put into a Paſte-board Box, where they muſt be kept till next Spring; one of theſe Females will produce two or three hundred Eggs: ſo that a few kept for Seed or increaſe is ſufficient. The reſt that you do not preſerve for breed, put into an Oven, after the baking of Bread, that it may be hot enough to kill the Worms, for the gnawing of their way out, is ſome prejudice to the bottom. Thoſe that are the groſſeſt and blackeſt are the beſt to breed on. Care muſt be taken that no Rats, Mice, Ants or other

Vermin, nor yet Hens or Birds come at them, becauſe they are very greedy of them, and alſo Tobacco ſmoak kills them.

The Worms will come forth in the Form of a Butterfly, having four Wings, ſix Feet, two Horns, and two very black Eyes, which being put into a convenient Place, the Males fluttering with their Wings will couple with the Females after that theſe have firſt purged themſelves of a kind of reddiſh Humour by the Fundament; in which Poſture they are to be left from Morning (which is the ordinary time of coming forth) till Evening, and then the Females are to be gently pulled away, nine or ten Hours being the longeſt they ſhould be left together: whereupon they will lay their Eggs, having firſt let fall another Humour eſteemed to proceed from the Seed of the Males: but the Males are then to be thrown away as uſeleſs.

The Seed or Eggs at firſt coming out is very White, but in a day or two it becomes Greeniſh, then Red, and at laſt by little and little Gray, which colour it retains always after.

When you have obtain'd your bottoms, take off the Bags, and having found their end, put ſix, ten or more ends in a Baſon of Water together where a little Gum Tragacanth is mix'd, and ſo you may eaſily wind them, the ſmall Hairs of Silk ſeldom break: but if they do, they are eaſily found again, except the Worms are ill fed: then the Silk is ſmall and eaſily breaks.

Another way to make theſe gummy Bottoms wind eaſie is this, take Soap-boylers Liquor or Lee which is very ſharp and ſtrong, and put your Bottoms therein, ſetting them over the Fire, till the Liquor be ſcalding hot, and let the Bottoms remain therein about half a quarter of an Hour till the Gummineſs be diſſolved, then put the Bottoms into clean ſcalding Water, and let them lie a while therein and they will eaſily unwind. A Lixivium made of Wood-aſhes very ſtrong will do as well as the aforeſaid Soap-boylers Liquor.

There is a kind of Tow or rough Sort of Silk that will not wind up with the other, which may be prepared, and good Silk made thereof, and indifferent alſo of the Bags themſelves, but the fineſt of the Engliſh Silk may compare with that of the fineſt Sorts of any part of the World.

Chap. XXI. *Of Fiſh-ponds.*

F*Iſh-ponds* are no ſmall improvement of watry Boggy Lands, many of which are fit for no other Uſe; nor is there leſs profit in making of them in Bottoms between riſing Grounds, tho' they are dry Lands, if we conſider the uſefulneſs of them for the watering of Cattle, and the keeping of Fiſh, the Advantage of which, both for the Houſe and Market, few are ſenſible of, it being a profit that comes in without any Charge, expence or labour, and likewiſe the benefit that there is in ſtopping of the Floods that fall from the Uplands, ſo as to cauſe the Waſhings of the Dung to ſettle at their bottoms; there being nothing that is a greater Improvement of Sandy or Gravelly Land than Mud produced by the Waſhings of the upper Grounds.

In making of a Pond, let the head of it be at the loweſt part of the Ground, and the Trench of the Flood-gate or Sluce have a good fall that it may not be too long in emptying. The beſt way of making the head ſecure is to drive in two or three rows of Stakes above ſix Foot long, at about four Foot diſtance from each other, the whole length of the Pond-head, whereof the firſt row muſt he ramm'd at leaſt about four Foot deep, that they may ſtand ſtrong and ſure; or if you find the bottom any thing falſe, eſpecially if it conſiſt of a running Sand, you may beſides lay the Foundation with Quick-lime, which ſlacking will make it as hard as a Stone.

Some lay a Layer of Lime and a Layer of Earth, which is a very great Advantage in the making of the heads of Ponds, Mill-damns, *&c.* And then digging your Pond, carry the Earth, and caſt it among the Piles and Stakes, and when they are well covered over, drive in another row or two as you ſee occaſion over them, ramming in the Earth in the void Spaces, that it may lie cloſe, and keep in the Water: and ſo you muſt continue Stakes upon Stakes, ramming in the Earth till the Pond-head be of the height you deſign it: The inſide of the ſaid Damn muſt be very Smooth and Streight; and if 'tis made very ſloaping on each ſide 'tis the better, leaving a waſte to carry off your waſte Water in times of Floods or Rains. The depth of your Pond ſhould be about ſix Foot of Water at the deepeſt part, and if on the ſides are ſome Shoals for the Fiſh to Sun themſelves in, and to lay their Spawn on, it will be of advantage to your Ponds, as will likewiſe the having in other places Holes, hollow Banks, Roots of Trees, Iſlands, *&c.* for retiring places for your Fiſh.

When you have finiſh'd your Pond, and let in the Water, you may ſtore it with Carp and Tench, which do the beſt together of any Fiſh, all other Fiſh being devourers of their Spawn. But I think, that if you have variety of Ponds, 'tis better to keep all Sorts of Fiſh by themſelves; except you ſtore a Pond with Fiſh of Prey, as Jacks or Perch, and then you muſt put in Roach, Dace, Gudgeons, or other very increaſing Fiſh for them to feed upon: but not a Tench, as moſt Authors propoſe. For a Jack or a Perch will as ſoon, if not ſooner, ſeize on a Tench, than any other Fiſh, as I found by experience in a Pond of mine that a Pike got into by chance.

Gravelly and ſandy Bottoms, eſpecially the latter are the beſt breeding Ponds; and a fat Soil with a white fat Water, as the waſhings of Hills, Commons, Streets, Sinks, *&c.* is the beſt to fatten all Sorts of Fiſh; an inſtance of which I met with from a Gentleman in *Nottinghamſhire*, that had a ſmall Pond at the bottom of a Hill, upon the ſide of which was a ſmall Village, above which was a very good Spring that run thro' the middle of the Town, and met with all the Sinks and other Drains belonging to the Houſes, which it conſtantly (being a very large Spring) carried into the Fiſh-pond that was below the Hill, where my Friend aſſured me, that he had often put in Carps of four or five Inches long, that in a Years time grew to the length of eighteen Inches, which was confirm'd to me by ſeveral of his Neighbours, as well as himſelf; whereas the ordinary growth of a Carp is not above two or three Inches at that time. Only where ſuch Floods are too violent, it may be good to carry ſome part of them on one ſide of the Pond, that they may not carry away the Fiſh; Carp being very apt to float away with freſh Water.

For ſtoring of your Pond, Carp is to be preferr'd for their goodneſs, quick growth, and great increaſe, their breeding five or ſix times in a Year. But as the Female is eight or nine Years old before ſhe breeds, you muſt take care conſtantly to keep a good ſtock of Females of that Age in your Ponds, if you deſire a breeding Pond; indeed the Females ſhould never be killed, becauſe they are often very apt to die after their Spawning. The Male Carp muſt be three or four Years old, and to every Female you may in a Pond that breeds well, put from three or four Males to a dozen or more.

A Pond of an Acre of Land if 'tis a feeding, and not a breeding Pond, will every Year feed well two hundred Carps of three Years old, three hundred of two Years old, and four hundred of a Year old. Carps delight in Marl-pits, or Pits that have clean clay bottoms, new Ponds or old Ponds, full of Weeds, that are warm and ſhelter'd from the Winds, and that have Graſs growing at the bottom or ſides, whereon they feed in hot Months. Carp and Tench thrive alſo mightily in Ponds or Ditches near the Sea, where the Water is a little Brackiſh: but they do not eat ſo well as in clear Water. If Grains, Blood, Chickens Guts, *&c.* be flung into a Pond, it will much help to fatten the Fiſh, and to increaſe their growth. If you cleanſe a Pond of Weeds, do it at the fall of the Leaf and not in the Spring, becauſe it rather increaſes than diminiſhes them.

Your Pond ſhould every three or four Years be drain'd, and your Fiſh ſorted; if 'tis a breeding Pond, you muſt take out the ſmaller ones to ſtore other Ponds with, that you may not ſtarve the great ones, which a great ſtock of ſmall Fiſh in a Pond is apt to do. And therefore in feeding Ponds 'tis beſt to keep them pretty near of a Size.

Ponds made at the Head of a Chalky Spring are very good for *Trouts*, who will mightily thrive in them. *Flounders* will both thrive and breed in any Pond, and eſpecially Clay Ponds, and grow much larger than thoſe in Rivers.

All Sorts of Bitterns, Herons, Sea-Gulls, Kingsfiſhers, Water-Rats, Water-Mice, Otters, *&c.* are very great Enemies to Fiſh, and therefore ſhould be deſtroy'd, as much as you can; but the greateſt Deſtruction of Fiſh in Ponds, is occaſion'd by the Froſt, to prevent which ſome propoſe to break the Ice, and to lay in Pipes, Straw, *&c.* to give Air to the Fiſh, all which ways I have found to fail when my Ponds have been foul: but when clean, I have preſerv'd them without uſing of any of theſe ways; wherefore I cannot but think that 'tis the foulneſs of the Ponds only that ſtencheth the Water: and therefore (not only for the Preſervation of Fiſh, but becauſe it much helps their breeding and feeding, by affording of them Earth to feed and lay their Spawn on) I would very often have Ponds cleanſed; the Mud whereof doth commonly more than pay the Charge, where you have a good bottom to caſt it out on; but as 'tis much more chargeable and troubleſome to get out in boggy and ſpringy Bottoms where you cannot Cart it; ſo I ſhall adviſe that all Ponds made in ſuch Places, ſhould be made like Moats, and not broad Ponds, that ſo when ever you have a mind to empty them, the Workmen may at one or two throws at the moſt be able to caſt the Mud out on the Banks, for the Price of which Sort of Work, every Pole-ſquare of Mud that is twelve Inches deep is worth Six-pence a Pole to fling out where it may be done at one throw; but where two is required 'tis worth Twelve-pence a Pole, *&c.*

Having thus given you an Account of the beneficial part of Husbandry, I ſhall next proceed to the Conſideration of ſeveral things that are injurious to the Husbandman, with their Remedies.

BOOK VII.

Chap. I. *Of things prejudicial to the Huſbandman.*

Heat and drought.

GReat Heats and Droughts are often very prejudicial to the Farmer, in that they exſiccate and waſte the moiſture and vegetative Nature of the Earth, ſo that in a dry Year moſt of our Commons, or open Field Land yield but indifferent Crops either of Corn or Graſs: and tho' dry Summers are the moſt plentiful of Corn, 'tis becauſe we have ſo much low Ground and incloſed Lands that are defended from the ſcorching Heats of the Summer Air; the only remedy to prevent which, are tall Incloſures and plenty of Water: The *Firſt* of which we have given Direction about in the Methods propoſed for the planting and ordering of Trees. But the *Second* in many Places is more difficult to remedy, tho' 'tis what may be many ways effected, as *Firſt*,

Firſt, By ſinking of Wells, which where they are very deep, makes it very troubleſome and chargeable to raiſe the Water.

Secondly, By bringing the Water in Pipes, Gutters, *&c.* which is eaſily done where the Spring or Stream from whence you bring it, is higher than the place where you deſire to have it.

Thirdly, by raiſing of the Water with Pumps, Water-wheels, *&c.*

Fourthly, by making of Ciſterns or Receptacles for Water, for either the Rain or Winter-ſprings to fill, in which the Water may be kept throughout the Summer.

In which ſort of Contrivances we are very deficient. For in the mountainous Countries of *Spain* they have no Water but what they get this way. Alſo in *Amſterdam* and *Venice* they keep Rain-water in Cellars made on purpoſe for Ciſterns capacious enough to contain Water for the whole Year it being renewed as often as the Rain falls. Therefore the being put to ſuch difficulties for the watering of Cattle, and other Inconveniences for want of Water, as many are in ſeveral places, is the effect of our want of Induſtry and Care, much more Rain falling here than on the Continent where theſe Pools and Ciſterns ſupply all their Wants for their Houſes, Cattle and Gardens: and yet we have thouſands of uſeleſs Acres for want of ſo eaſie a Remedy.

Ciſterns. If you deſign to make your Ciſterns under your Houſe, as a Cellar. which is the beſt way to preſerve it for culinary Uſes, you may lay the Brick or Stone with Terrace, and it will keep Water very well: or you may make a Cement to join the Bricks or Stones with, with a Compoſition made of ſlacked ſifted Lime and Linſeed Oyl tempered together with Tow or Cotton-wool. Or you may lay a Bed of good Clay, and on that lay your Bricks for the Floor, then raiſe the Wall round about, leaving a convenient ſpace behind the Wall to ram in Clay, which may be done as faſt as you can raiſe the Wall: ſo that when it is finiſh'd, it will be a Ciſtern of Clay walled within with Bricks, and being in a Cellar, the Bricks will keep the Clay moiſt (altho' empty of Water) that it will never Crack. This I have known to hold Water perfectly well in a ſhadowy place, tho' not in a Cellar. Thus in Gardens, or any other places may ſuch Ciſterns be made in the Earth and cover'd over, the Rain-water being convey'd thereto by declining Chanels running unto it, into which the Alleys and Walks may be made to caſt their Water in haſty Showers. Alſo in or near Houſes may the Water that falls from them be conducted thereunto.

But the uſual way to make Pools of Water on Hills and Downs for Cattle, is to lay a good Bed of Clay near half a Foot thick; and after a long and laborious ramming thereof, they lay another courſe of Clay about the ſame thickneſs, and ram that alſo very well; and pave it very well with Flints or other Stones, which not only preſerves the Clay from the tread of the Cattle, *&c.* but from chapping by the Wind or Sun at ſuch time as the Pool is empty. Note alſo, That if there be the leaſt Hole or Crack in the bottom, it will never hold Water, unleſs you renew the whole labour; or you may make a Ciſtern or Pool to hold Water by daubing of it with Clay and Mortar, and after draw it over with Mortar; if any cleft happen, ſtop it with a Cement of clean Hair and Tallow mix'd with unſlack'd Lime and Yolks of Eggs well beat, and made into Powder, and mix'd well together. I am told that in *Wiltſhire* upon the Top of the dry chalky Hills where there is any deſcent to catch the Water, they make Ponds, the bottom of which they cover with Chalk Rubbiſh, which they beat ſmall, and when any Rain comes to moiſten it, they ram it well, and drive Cattle into it, and fold Sheep on it to trample it, and it makes it hold Water.

Great Cold. Heat and Drought do not always attend us, nor do they ſo frequently afflict us, eſpecially in the greateſt Part or Proportion of this Country, but that we have alſo a ſhare of a ſuper-abundant Cold and Moiſture. The Cold that moſt afflicts the Huſbandman, is the bitter Froſts that ſometimes happen in the Winter or Spring, and are beyond our Power either to foreſee or preveut; yet that they may not injure us ſo far, as otherwiſe they might, we ſhall propoſe the following Remedies or Preventions.

Some Lands are more inclinable and capacitated by their Nature or Situation to ſuffer by cold or wet, than others are; as thoſe that lie on a cold Clay or Chalk, more than thoſe that lie on a warm Sand or Gravel; thoſe that lie moiſt, than thoſe that lie dry; and thoſe that lie on the North or Eaſt-ſides of Hills, than thoſe that lie on the South or Weſt: therefore 'tis good to plant or ſow ſuch Trees, Grains or Plants that can leaſt abide the cold, in ſuch Grounds as are more warmly ſituated, as I obſerved before.

And tho' 'tis not an eaſie thing to alter the Nature of the Ground, yet 'tis feaſible to take away the offenſive moiſture, that doth ſo much cool the Land, as I have ſhewed before in the *methods uſed for draining of Grounds:* and alſo to place ſuch artificial Shelters againſt the Cold, as may very much remedy this inconvenience; as we ſee 'tis moſt evident, that Froſts have a greater influence where the Air hath its free Paſſage, than where it is obſtructed; for which end, Incloſures and planting of Trees, *&c.* are a great Preſervative, eſpecially ſuch Incloſures as are made in *Cornwall* and *Devonſhire.* The Bank-fence is likewiſe a good ſhelter for the Land and the Cattle.

Wet. And though great Rains and too much wet prove injurious to ſuch Lands as are of themſelves moiſt and flat, as I ſaid before: yet the greateſt Injury they do to the Huſbandman is in Harveſt-time, againſt which the beſt Remedy is Expedition.

Worthy of Commendation is the Practice uſed in ſeveral places of laying up their Wheat-ſheaves in very large Shocks or Heaps in the Fields, ſo as to abide any wet. The manner of doing of this I have already deſcrib'd. Whereas in other places they leave all to the Weather, (tho' their Land lie remote from Barns,) to their very great Damage. So much are ſome People guided by the Cuſtom of the Place, rather than their own Reaſon.

Where Lands lie two or three Miles from the Owners Barns, as in ſome places in Champaigne Countries they do, the cover'd Reek Staval (much in uſe Weſtward) muſt needs prove of great advantage in wet Harveſts.

Where Lands lie at a far diſtance one from another, ſeveral Barns, built, as the Land requireth, are very Convenient for the more ſpeedy houſing of Corn, for the better preſerving of it, the more eaſie thraſhing it out, the more Convenient fothering of the Cattle with the Straw, and for the cheaper diſpoſing of the Soil for the Improvement of the Land, as is practis'd in the Clay-Countries of *Suſſex*, where their Gate-ways between their Incloſures are ſo miry (they having no Gravel to mend them with) that they cannot (except it be a dry Summer) Cart between one Field and another. For which reaſon a Farm of fifty Pound *per Annum*, hath commonly two, if not three Barns belonging to it; with as many Cow-yards to fother Cattle in, adjoining, to prevent carting of their Corn, Dung, Fodder, *&c.* whereas a great Barn cannot lie near to every part of a large Farm, and the Corn muſt be more expos'd to the wet in a rainy Harveſt.

High Winds.

High Winds prove very Pernicious and Injurious to the Huſbandman in ſeveral reſpects, to his Building, Fruit-trees, Hops, Corn, *&c.* as many in the plain open Countries find by woful Experience: to prevent which, as to Building, we find by common Experience, that Trees are the only and moſt proper

per Safeguard; for which the Yew is the beſt, although it be long a growing: only 'tis to be obſerv'd, that the Trees ſhould not be planted ſo near the Building, as that their fall may any ways indanger them.

Timber or other Trees which are alſo ſubject to be ſubverted, or broken by high Winds, to abate the largeneſs of their Heads by cutting off their ſpreading Arms, a Yard or ſo from the Body, proves a good prevention, eſpecially the Elm, which ought often to have its Boughs ſhred up, or elſe it will be very ſubject to be injured by high Winds.

Hops of any Plant the Huſbandman propagateth, receive the moſt Damage from high Winds, which may in ſome Meaſure be prevented againſt the Spring-wind, which nips the young Buds, and afterward bloweth them from the Poles; a good Pale or Thorn-hedge much advantageth them. But againſt the boiſterous Winds when they are at the Tops of the Poles, a Tall Row of Trees incompaſſing the whole Hop-garden, is the beſt Security in our Power to give them. Be ſure alſo to let their Poles be firm and deep in the Ground.

As to Corn, Winds ſometimes prove an injury to it in the Ear, when they are accompanied with great Rains, by lodging of it. The only remedy is to cut it betimes, and to let it lie long on the Gravel to kill the Weeds, and to harden the Grain, which will never grow nor receive Nouriſhment after the Stalks are broke, or much bow'd down to the Ground. But the greateſt injury is to the Winter Corn when it is young, the fierce bitter Blaſts in Spring deſtroying whole Fields, which nothing is a preventer of but Incloſures.

Blites and Mill-dews have been generally taken to be the ſame thing, which hath begotten much Error, and the ways and means uſed for the Prevention and Cure have miſcarried thro' the Ignorance of the Diſeaſe. For, *Mill-dew* is quite another thing from blaſting, Mill-dews being cauſed, as ſome ſay, from the condenſation of a fat and moiſt Exhalation in a hot and dry Summer, from the Bloſſoms and Vegetables of the Earth, and alſo from the Earth it ſelf, which by the coolneſs and ſerenity of the Air is condenſed into a fat glutinous Matter, and falls on the Earth again, part whereof reſts on the Leaves of the Oak and other Trees, whoſe Leaves are ſmooth, and do not eaſily admit the Moiſture into them, as the Elm or other rougher Leaves do. Mill-dews become the principal Food of the Bees, being ſweet, and eaſily convertible into Honey. *Mill-dews*

Other part thereof reſts on the Ears and Stalks of Wheat, beſpotting the Stalks with a different Colour from the natural, being of a glutinous Subſtance by the heat of the Sun, and ſo binds up the young, tender, cloſe Ears of the Wheat, that it prevents the Growth, and compleating of the imperfect Grain therein, which occaſioneth it to be very light in Harveſt and to yield a poor, lean Grain, for which reaſon many reckon the bearded Wheat not ſo ſubject to it, as the other, the Beards defending of the Ear from it.

Some think Mill-dews to proceed from Vapours ariſing from the Dung, and ſo falls upon the Corn: Becauſe Lands new dunged are the moſt ſubject to it.

But if after the Mill-dew falls, a Shower ſucceeds, or the Wind blows ſtiffly, it waſheth or ſhaketh it off, and theſe are the only natural Remedies againſt this Diſtemper.

Some adviſe in the Morning after the Mill-dew is fallen, and before the riſing of the Sun, that two Men go at ſome convenient diſtance in the Furrows, holding a Cord ſtretched ſtreight betwixt them, carrying of it ſo, that it may ſhake off the Dew from the Tops of the Corn, before the heat of the Sun has thicken'd it.

It is alſo adviſed to ſow Wheat in open Grounds, where the Wind may the better ſhake off the Dew; this being look'd upon to be the only inconveniency Incloſures are ſubject unto; but it is evident that the Field-Lands are not exempted from Mill-dews, nor yet from Smut, where it is more than in incloſed Lands.

Some ſay, that Lands that have been ſubject to Mill-dews many Years, have been cured by ſowing of Soot with, or juſt after the Corn.

Blites. 'Tis obſervable, that after a wet Summer, Corn is apt to be *blited*; the reaſon of which is, that the overmuch Moiſture that lies continually at the Roots of the Corn, maketh it run much to Straw, and little to Corn; and at ſuch time as the Corn ſhould kern, the moiſt Vapours exhaled by the Sun from the wet Ground, do in the Nature of a Mill-dew, prevent the due growth of the Grain in the Ear.

'Tis obſerv'd, that when theſe Mill-dews ariſe, or Blites fall, they infect one Sort of Grain generally, as ſometimes only Wheat, ſometimes Oats, &c. the like happens among Fruits; ſometimes Apples are generally blaſted; ſometimes only Pears, ſometimes only Cherries, Walnuts, Filberts, Plumbs, &c.

Smuttineſs *Smuttineſs* in Corn happens from very different Cauſes, to what Mill-dew and Blites do, it being chiefly to be found in dry Summers, and is occaſion'd from too much Rankneſs and Fatneſs of the Land: It being obſerv'd, that ſtrong Lands are to be ſown with Hemp, Barly, Peaſe, and ſuch like, to abate the Fertility thereof, before it be ſown with Wheat, which would otherwiſe be ſubject to Smuttineſs.

It is likewiſe confidently affirm'd, that the ſowing of Wheat mix'd with ſmutty Corn, generally produces a ſmutty Crop, unleſs it be ſteeped in Brine all Night, and then mix'd in the Morning juſt before ſowing, with Lime beat to Powder, which is eſteemed a certain Remedy. Only you muſt obſerve, that what Corns are light and ſwim upon the Top of the Brine, are to be ſcummed off.

You may alſo prepare your Ground with Lime, Soot, or other ſaline Manure, and it will produce Corn free from Smut. Dung alone is reckon'd a cauſer of it, if 'tis laid on juſt before ſowing; and Land often ſown with the ſame Seed, or much out of heart, is ſubject to Smuttineſs, as hath been found by Experience, where the ſame and different Seed hath been ſown on two Sorts of Land.

If you have ſmutty Ears among your Corn, ſo as to black the reſt of your Corn, if you deſign it for Seed, pick out the black Ears: But if for Sale, you muſt take it and waſh it in two or three Waters, 'till you ſee all the Blackneſs quite gone: Which done, drain away the Water clean, and laying the Corn on Cloths or Coverlids, lay it in the Heat of the Sun, and ſo dry it again, 'till it be ſo hard that it will grind. But if the time of the Year will not ſerve for the Sun's drying of it, then dry it on a Kiln, with a very ſoft, gentle Fire, and cool it in the Air, to recover the Sweetneſs again, and the Corn will be as ſerviceable as any other; only for Seed, it will by no means do; and therefore it concerns every Countryman to take heed, that the Corn he buys for that uſe be not waſhed.

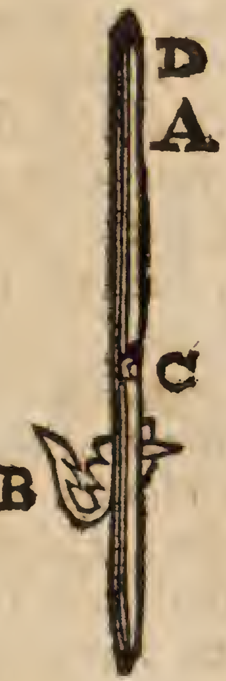
To know which from other Corn, you may take it up in your Hand; and if the Corn look bright, clear and ſhining, being all of one intire Colour, you may be ſure 'tis unwaſh'd: But if it look whiter at the Ends than in any other part, and that the whiteneſs is blackiſh, and not ſhining, you may conclude it to be waſhed Corn.

Again, put three or four Grains in your Mouth, and chew them, and if the Taſte be ſweet and pleaſant, and grind mellow and gently between your Teeth, 'Tis good. But if it have a bitteriſh, raw Taſte, and grind hard between your Teeth with much roughneſs, than hath the Corn been waſh'd and dry'd again, and is not good for Seed: alſo when Corn is more than ordinarily dry, both are ill Signs, and ſhew either imperfect Corn, or bad keeping: For good Corn always holds an indifferent Temperature betwixt dry and moiſt, and will always feel cool and ſlippery in the running of it. But ſome ſay that if Wheat be ſmutty or Mill-dewed, if in the thraſhing of it you mix Barly-chaff with it, it will cure it.

There is much Land in *England* that is capable of very great Improvement, by removing of theſe common and ſtubborn Obſtacles, as Stones, Shrubs, Buſhes, Goſs, Broom, *&c.* which are naturally produced in many places, and are a very great prejudice to Land, by ſucking out the heart and fatneſs of it, or by occaſioning a burning Drought upon it. As,

Stones, where they are too thick upon a hot burning gravelly Land, they are of good uſe to mend ways with, or to lay to the Roots of Trees, *&c.* being picked up and laid in heaps, and ſo carried off. But there are ſome very cold, chalky Clays upon the Tops of bleak Hills much expoſed to high Winds and nipping Froſt, that the Stones are a Safeguard to the Corn that grows on them, by the keeping of the Roots of it warm in Winter, and ſheltering of it by their ſhade in Summer, from the ſcorching Heat of the Sun. Some of theſe Sorts of Lands that the Stones have been carried off, would neither bear Corn nor Graſs, till they were carried on again.

Shrubs and Buſhes are very great Annoyances to the Huſbandman, the difficulty and charges of pulling them up, being the principal Impediment of their removal, to them that are ignorant of doing it the moſt dextrous ways. Where they are tall and grow thick, the quickeſt way of pulling them up, is to incloſe in a Timber Chain as many of them as you can, and to clap to them a Team of Horſes, and ſo to rear them up: And when that Parcel is eradicated, then encompaſs as many more. But if they are not big enough for this way, or grow too thin, the following Inſtrument is the beſt for this purpoſe, and alſo for Furze, Broom, *&c.*



At A is a long Handle of Wood about four Foot long, at B is an Iron Hook jagged; at C is a little Hook, which they uſe thus: They put the Handle A a-ſlope from them and catch the Stem or Stalk of the Broom or Buſh they deſign to pull up in the Hook at B, and from that they bend the Stem to the little Hook at C, this occaſions the holding of the Stem that it do not ſlip, and ſo ſetting of their Shoulders to the upper End of the Handle at D as it ſtands ſloping, they raiſe up the Buſh or Broom; the Price of doing of which, where a Man hath Fourteen-pence a Day, is to pull up a Load of Buſhes or Broom which they reckon to contain ſixty Faggots for two Shillings, which Faggots being well bound ought to contain four Foot and a half in Circumference: But where the Buſhes are ſhort, and grow upon old Stubs, they muſt be ſtubbed with a Mattock, the Price of which where the Buſhes grow thick is Three-pence a Pole ſquare: but if you will have the Land dug up, that ſo you may be ſure to clear the Land of the Roots, and to kill them, the common Price is four-pence a Pole, the Owner of the Land having the Buſhes and Roots.

Furze. Some Lands are much given to the bearing of *Furz*, eſpecially ſuch as are inclining to Sand. Which is deſtroy'd either by plowing up, burning and mending of it well with Marle, Lime, Dung, *&c.* or by planting of Acorns among them, which the Furz will ſhelter and ſhade till they get up above them, and then the Oaks will deſtroy the Furz by dropping on them.

Broom. But the moſt pernicious Plant that grows upon Land is *Broom*, which, as it ſheds no Leaves, ſo 'tis continually ſucking the Heart of the Land it grows upon. The only way to kill it, is to pull it up, to plow the Land, and Burn-bate, and Manure it very well with Dung, Aſhes, *&c.* but the only effectual Remedy for it is Chalk and Marle. If you deſign the deſtroying it on Paſture Land, 'tis better to cut it up in *May*, when the Sap is in it; becauſe by that means, you kill the Roots: whereas if you pull it up, you are apt to leave ſtrings behind, the leaſt of which will grow.

Broom if well laid, will make an excellent Thatch for Houſes or Barns.

Ling, *Heath*, *&c.* being much of the ſame Nature, I ſhall paſs them by, becauſe they are cured by the ſame Remedies; and only obſerve that Heath in many places being very neceſſary for Firing where other Fuel is not to be got, the cutting up of the Turf is a very good way to deſtroy it, eſpecially if the Aſhes be laid on the places where 'tis cut off, it being an extraordinary good Manure for Land. The Price of cutting of the Turf is 8 *d.* a Load, five hundred of Turf being reckon'd to a Load.

Fern. Next unto theſe Shrubs, I think *Fern* one of the worſt of Weeds, and 'tis as hard to deſtroy, where it has any thing of a deep Soil to root in. I have ſeen the Roots of it in ſome Grounds, eight Foot deep. The beſt cure is often mowing of it while in Graſs. If you plow it up, plentiful dunging of it and Aſhes are very good: but the certaineſt cure for it is Urine. Fern cut when the Sap is in it, and left to rot upon the Ground, is a very great Improver of Land: if burnt when ſo cut their Aſhes will yield double the Quantity of Salt, that any other Vegetable will do. In ſeveral places of the North they mow them green, and burning of them to Aſhes, make the Aſhes up into Balls with a little Water which they dry in the Sun, and uſe them to waſh their Linen with, for which uſe they eſteem it near as good as Soap.

Thiſtles. *Thiſtles* are a great Annoyance to ſome Land, by killing the Graſs, Corn, *&c.* altho' they are a ſure token of the ſtrength of the Land. The way to deſtroy them is to cut them up by the Roots before ſeeding time, that they may not by their flying Seeds increaſe themſelves.

Ruſhes. *Ruſhes*, *Flags*, and ſuch like Aquaticks are beſt deſtroyed by draining; if that you cut your Drains below the Roots thereof, that they may take away the matter that feeds them, and by laying of Aſhes or Soot on them- and alſo by plowing of them up, and laying of the Land in high Ridges to drain it, and by mowing.

Twitch-graſs. *Twitch-Graſs* is a very pernicious Weed to ſome Land, by keeping of it looſe, hollow, and by drawing away the virtue of the Ground, to the prejudice of the Corn ſown upon it, it beſpeaks the Land to be of a cold, ſowre Nature; the beſt remedy is good fallowing in dry Weather, and harrowing it well, with good manuring of it with Lime, Dung, Aſhes, Chalk, *&c.* White Oats are likewiſe a good Seed to ſow on ſuch Land, becauſe they are ſown late, and come up quick to over-top it. Burn-bating of this Land is an effectual way alſo of deſtroying it.

Gooſe-graſs. *Gooſe-graſs* or *Wild-tanſie* is a Weed that ſtrong Clays are very ſubject to. The beſt cure of which is mowing of it in Summer, and well dunging of the Land, and never to plow the Land out of heart.

Green-weed or *Wood-wax*, if cut while green and made Hay of, Sheep will eat it in Winter.

Some Lands are more prone and ſubject to Weeds, and that in ſome Years more than others: for the deſtroying of which in Corn-Lands, the laying of them dry, and good fallowing is the beſt Remedy: but for Paſture-land, ſometimes mowing is good. Soot and Aſhes, eſpecially upon cold Lands, or Lands run over with Moſs, are an extraordinary Improvement.

Foxes. The *Fox* is a Beaſt alſo very prejudicial to the Huſbandman, by taking away, and deſtroying of his Lambs, Poultry, Geeſe, *&c.* eſpecially in places that are near great Foreſt-woods and covert places. The beſt way for deſtroying of them is with Guns, or Traps, after this manner; if you deſign to ſhoot them, procure a Sheep's Paunch, and tying of it to a long ſtick rub your Shooes well upon it, that the Fox may have no Scent of your Feet, and draw the Paunch after you, with which make a Trail a Mile or two in length; which order ſo as to bring it near ſome thick headed Tree. At which place when you have made your Trail, leave your Paunch, and with your Gun get up into the Tree; and as ſoon as it begins to be dark, you will ſee him come by you, upon the ſcent of the Trail, where you may ſhoot him. Obſerve, that you draw the Trail to windward of the Tree, if you can.

But if you have a mind to catch them with a Steel-trap, which is the ſureſt way; chuſe a place to ſet it, in a plain part of a large Field; let it be out of the way of all Paths, but not near either a Hedge or any ſhelter. Open your Trap, and lay it upon the Ground, and cut out in the Turf juſt the form thereof, and take out ſo much Earth as may make room to lay it, covering of it again very neatly with the Turf you cut out; and becauſe the joints of the Turf will not cloſe exactly, get ſome of the fine Mould that is to be found in a new caſt up Mole-hill, and fill the joynts with it, taking ſome Graſs, and ſticking of it in the Mould, as if it grew there. Make all ſo fine and plain, as that it may deceive your own Eye to look upon it. About eight or ten Yards from the Trap three ſeveral ways, ſcatter ſome of the fine Mould that you had out of the Mole-hill, very thin, upon a place about fourteen or fifteen Inches ſquare: and upon theſe places, and where the Trap is, lay two or three ſmall bits of Cheeſe, and with a Sheeps Paunch, as is before directed, draw a Trail of about a Mile long, to each of the three places, that are at a diſtance from the Trap, and from thence to the Trap, that ſo the Fox may come upon one of thoſe places firſt, which will make him approach the Trap with the more boldneſs, where you will ſeldom fail of him, only you muſt obſerve not to faſten your Trap, but to leave it looſe, that he may draw it to the Hedge-ſide, or to ſome Covert, or elſe he will bite off his Leg, and be gone.

Some bend down a Stick in the Wood, and ſet a Trrp for them in their Paths, like that which is ſet for Woodcocks, which hangs them up, or any other ſort of Vermine.

Badgers are almoſt as pernicious a Beaſt as the Fox, only they are not ſo ſubtil, nor can they ſo eaſily catch their Prey: but for what they can catch, as new fallen Lambs, young Pigs, and Poultry, they are as bad. The way to catch them is with the aforementioned Trap, or to ſet a Steel-trap or to dig a pit in their Paths that is five Foot deep, and about four Foot long, making of it narrow at the top and bottom, and wide in the middle. This muſt be covered with ſome ſmall Sticks and Leaves laid over it, ſo as that the Badger may fall in when he comes upon it. Sometimes a Fox may be catched in one of theſe pits; but 'tis very rare; for he is very cautious of his footing. Some hunt them into their holes in a Moon-ſhine Night, and dig them out. *Badgers.*

Otters are very great deſtroyers of Fiſh, eſpecially in Ponds, to which they will in a Night travel over Land ten or twelve Miles; their common aboad is under the Root or Stem of ſome Tree near the Water. Whence ſhe expects her Food by her diving and hunting under Water: ſo that few Fiſh are able to eſcape her. They are either taken by ſnaring them under the Water by the River-ſide; or by hunting of them with Dogs, where you may make uſe of the Spear. *Otters.*

In ſeveral places the Huſbandman ſuffers much by *Hares* and *Coneys*, which eat the Corn, Trees, &c. when they are young, eſpecially in hard Winters.

Hares. The *Hares* are great deſtroyers of Corn, where there are many of them, the Country man may leſſen the number of them as he ſees cauſe, either by hunting or courſing of them at ſeaſonable times, or by tracing them in the the Snow.

Coneys. *Coneys* are deſtroy'd or taken either by Ferrets or Purſe-nets in their Burrows, or by Hayes, Curs, Spaniels or Tumblers bred up for that purpoſe, or by Gins, Pit-falls, or Snares.

Poll-cats, *Weeſels* and *Stoats*, do a great deal of injury to Warrens, Dove-houſes, Hen-rooſts, &c. but the way of taking them in Hutches, Iron-traps, &c. are ſo well known that I need not ſay any thing of it.

Poll-cats. To prevent *Poll-cats* or ſuch like from deſtroying your Pigeon-houſe, if you have a conveniency, place it in an Iſland where you may have ſome Ditch or Channel of Water round it, and it will preſerve it from Vermin; there being ſcarce any Beaſt of Prey that will take the Water.

Moles. *Moles* are a very pernicious Enemy to Huſbandry, by looſening of the Earth, and deſtroying the Roots, of Corn, Graſs, Herbs, Flowers.

In the Southern parts of *England*, their uſual way of deſtroying of them is by Traps that fall on them, and ſtrike ſharp Tines or Teeth through them; which are ſo common, that they need no Deſcription.

The beſt ſort of Trap is made after this Faſhion. Take a ſmall board of about three Inches and a half broad, and five Inches long on one ſide thereof: raiſe two ſmall round Hoops or Arches, one at each end, like unto the two end Hoops or Bails of a Carrier's Waggon, capacious enough for a Mole to creep through eaſily; in the middle of the Board make a Hole about the bigneſs of a Gooſe-quill; for to put into which have a ſhort Stick about two Inches and a half long; one end of which muſt be fitted to the ſaid hole; and the other a little forked. Alſo you muſt cut a Hazle, or other Stick about a Yard or a Yard and a half long, that being ſtuck into the Ground, may ſpring up. Then make a link of Horſe-hair very ſtrong, and that will eaſily ſlip, and faſten it to the end of the Stick that Springs. Have alſo in readineſs four ſmall hooked Sticks, and go to the furrow or paſſage of the Mole, and after you have open'd it, fit in the little Board with the bended Hoops downward, ſo that the Mole when ſhe paſſes that way, may go directly through the two ſemicircular Hoops. But before you fix the Board downward put the Hair-ſtring through the hole in the middle of the Board, and place it round, that it may anſwer to the two Hoops, and with the ſmall Stick (gently put into the hole to ſtop the knot of the Hair-ſpring, but not enter'd too far into the hole) place it in the Earth in the Moles paſſage, and by thruſting in the four hooked Sticks, faſten it, and cover it with Earth; and when the Mole paſſes that way, (either the one way or the other,) by diſplacing or removing of the ſmall Stick that hangs perpendicularly downwards, the knot paſſing through the hole, the Spring takes the Mole about the Neck.

Others deſtroy them with a Spaddle, waiting in the Mornings and Evenings for them; at which times they uſually ſtir, and immediately caſt them up, eſpecially about *March*, when they breed, by turning up the Hills that they breed under, they uſually making their Neſts in the greater Hills, which are eaſily diſcern'd. Then alſo will the old ones come to ſeek their young, which you may preſently take.

The Pot-trap is by ſome much commended, which is a deep Earthen Veſſel ſet in the Ground with the brim even with the bottom of the Mole-tracts; the chief time of ſetting of which is in their Bucking time, which is in *March*.

Alſo where Moles annoy your Gardens, Meadows, or ſuch places as you are not willing to dig, or break much, the fuming of the holes with Brimſtone, Garlick, or other unſavoury things, will drive them out of the Ground that was before infeſted with them; and the putting of a dead Mole into a common haunt, will make them abſolutely to forſake it.

Chap. II. *Of Mice and Rats.*

Mice and Rats.

EVery one is ſenſible of the great Injuries theſe Vermin do both in the Field, and where they raiſe Nurſeries of Trees, in their Gardens, where they ſow and plant Beans, Peaſe, *&c.* and in their Houſes, Barns, and Corn-ricks.

In the Fields, Orchard, Gardens, *&c.* the common way of catching of them, is by placing of an Earthen Pot in the Ground about half full of Water, which they cover with a Board with a hole in the middle thereof, and cover the Board with Hawm, Straw, or ſuch like Rubbiſh, under which the Mice ſeeking for Shelter, creep into the holes where they find the Pot ready to receive them.

Some place three Sticks in the form of a Figure of 4, which the bait with a piece of Cheeſe, and upon it lay a Tyle, which falling down when they touch it, kills them: this is a very good Trap for to catch them with in Gardens and Orchards, and ſuch like places.

In *Staffordſhire* they put Birdlime round the holes, which the Mice and Rats run through in their Houſes, Barns, *&c.* which, they ſay, ſticks ſo to their Skins, that they will never leave ſcratching till they kill themſelves.

Some ſtrew Sand amongſt their Corn, which, they ſay, prevents their burrowing in it; becauſe of its falling into their Ears.

As for the making of Stavals, Granaries, Barns, *&c.* that the Mice and Rats cannot come at the

Corn that is in them, I have already given you directions.

Chap. III. *Of Kites, Hawks,* &c.

K*Ites, Hawks,* and other Birds of Prey, wait for Pigeons, Chickens, Pheaſants, *&c.* for which reaſon 'tis neceſſary that the Countryman be conſtantly provided with a good Fowling-piece to deſtroy and ſcare them away.

Alſo you may place ſmall Iron-gins about the breadth of ones hand made like a Fox-gin and baited with raw Fleſh, which is a very good way to catch them.

Alſo by ſtraining of Lines or pieces of Nets over the places where you keep Chickens, Pheaſants, or ſuch like, you may fright them away.

Crows, Ravens, Rooks and *Magpies* are great annoyances to Corn, both at Seed-time, pulling of it up by the Roots whilſt it is young: and feeding on it alſo at Harveſt: a good Fowling-piece is the beſt Inſtrument at preſent; but the only way to deſtroy the Kind of them would be ſome publick Law to incourage the Deſtructions of their Neſts and Young, which are ſo obvious at their building time, that it ſeems to be a very eaſie work, and much better than any other way.

Several inventions of Scare-crows there are to keep them from Corn, amongſt which this is eſteemed the moſt effectual, *viz.* To dig a hole in ſome obvious place where the Crow, *&c.* annoy your Corn; let it be about a Foot deep or more, and near two Foot over, and ſtick long black Feathers of a Crow or other Fowl round the Edges thereof, and ſome at the bottom: ſeveral of theſe holes may be made, if your Ground be large; and where theſe holes are thus dreſſed, the Crows will not dare to feed.

Dead Crows, *&c.* hanged up do much terrifie them; but amongſt Cherry-trees, and other Fruit-

Trees, which are much prejudiced by them, draw a Packthread or ſmall Line from Tree to Tree, and faſten here and there a black Feather, aad it is ſufficient.

Pigeons are a very pernicious Fowl to the publick, and bring but little profit to the Owners (that I could ever find) where they muſt be fed in Winter and at Benting time, which you muſt do in all places, except the Clay Countries where they ſow great Quantities of Gray-peaſe and Horſe-beans, which are ſow'd forward in the Year, as I ſhew'd before.

The only way to get rid of them, is to affright them with ſhooting Powder at them, and to hang up Feathers in Lines as was before directed for Crows and other Birds.

Jays. *Jays* are great devourers of Beans, Peaſe, Cherries, and other Garden-Fruits; but are eaſily met withall, if you are watchful in a Morning early, by lying in Ambuſh for them, ſometimes changing your place, leſt they diſcover you: but if they do, they commonly make but ſhort Flights as it were from Tree to Tree, ſo that you may eaſily purſue them where you have any thing of ſhelter to get behind.

A very good way to take them, is to drive a Stake into the Ground about four Foot high above the Surface of the Earth; let the Stake be made picked at the top, that the Jay may not ſettle on it, and within a Foot or thereabouts of the top of the Stake, bore a hole through about three quarters of an Inch Diameter, fit a Pin or Stick to the hole about ſix or eight Inches long, and make a Loop or Spring of Horſe-hair faſtned to a Stick or Wand of Hazel that may be entred into the Stake at a hole near the Ground, and by bending of the Stick up put the Loop of Horſe-hair through the upper hole, and put the ſhort Stick a little way into the hole, and lay the Loop round on the ſhort Stick, that the Jay when he comes may find this reſting place to ſtand conveniently amongſt his Food, ſo as that when he pearches on the ſhort Stick he may by his weight cauſe it to fall which will give the Spring the Advantage of catching the Jay by the Legs. This is a very good way of taking of them, if 'tis placed amongſt Beans, Peaſe, or ſuch things as the Jay haunts, it being their uſual Cuſtom to hop from Tree to Tree, or any thing they can meet withall.

Bulfinches are moſt pernicious Birds to young Fruit-Trees, by feeding on the young pregnant Buds in Spring time which contain the Bloſſoms, and are the only hope of the ſucceeding Year. ***Bulfinches***

If *January* prove very cold, that the Black-thorns are backward in *February*, the Bulfinches will be very buſie in the Garden. The Trees there growing being forwarder than in the Field in a cold Winter I have known ſo many of them in a Garden, that in a little time they have almoſt totally unbudded the Plum-trees, Currant-trees, *&c.* of a whole Town.

They are eaſily taking off with a Fowling-piece, only you muſt be cautious that your Shot ſpoil not your young Layers or Branches of your Trees.

This Bird is ſo bold that no Scare-crow or other thing will frighten him from the Trees he delights to feed on; but on the *Morocco* Plumb or the Damſon, he will ſettle and feed, notwithſtanding all you can do: ſo that the beſt way to preſerve theſe Buds, is to Birdlime the Twigs.

Goldfinches are very injurious to the Gooſeberry Buds, coming in Flights, and cleanſing of a whole Garden of them immediately, as the Bulfinches will the Bud of the Currant-trees: The remedies againſt them are the ſame with the other. *Goldfinches.*

The *Chaffinch*, *Greenfinch*, *Titmouſe*, and other ſmall Birds are injurious to ſome Fruits; but not like thoſe beforementioned, who will prey upon the Buds of all Sorts of Fruit-trees, under the very Nets that cover the Trees, and near unto the dead Bodies that hang on them. *Chaffinches.*

Sparrows, although they are but ſmall, yet are they a numerous Generation of Corn-eaters: It is unknown how much they devour, and what a great damage they are to the Huſbandman, eſpecially in ſcarce and dear Years.

Many ways are made uſe of to deſtroy them, but none more effectual than the large folding Sparrow Net, which will take many dozens at a draught: They being ſo eaſily induced to come to a ſhrap or place baited for them, eſpecially in hard Weather in the Winter, and in the Summer before the Corn is ready for them: At both which times meat is ſcarce abroad, and then they flock to Barns. To prevent Birds eating of new ſown Corn, ſow Lime or Soot upon it.

Frogs. Moiſt and warm Lands, which are uſually the moſt fertil, are moſt ſubject to theſe Vermin: *Frogs* are beſt deſtroyed and prevented in *February* in the Ditches where they Spawn, by deſtroying of both Frogs and Spawn. *Toads* are eaſily deſtroyed in Summer Evenings (by a Candle) creeping up and down the Walks and Paſſages about your Houſe and Gardens, *&c.*

Snails. To Wall-fruit and ſeveral Sorts of Garden-plants, there cannot be a worſe enemy than *Snails*, which you may in a dewy Morning eaſily find where they moſt delight to breed; but the ſureſt way is in the hard Winter to ſeek out their haunts, and to make a clean riddance of them: They lie much in the holes of Walls, behind old Trees, under Thorns or other old and cloſe Hedges, *&c.*

Ever obſerve not to pluck of ſuch Fruit as the Snails have begun to feed on, but let it remain: for they will make an end of that, before they begin any more.

The beſt way to take Snails, is to ſet Tyles, Bricks, or Boards hollow againſt a Wall, Pails, *&c.* So as that the Snails may ſeek ſhelter under them. About *Michaelmas* the Snails ſecure themſelves in ſuch places for the whole Winter, unleſs you prevent them by taking of them in *December*, and deſtroying of them, which is an eaſie and ſure way to rid your Garden of them.

Worms. *Worms* are very prejudicial to Land by eating the Roots both of Corn and Graſs, eſpecially when the Corn begins firſt to ſhoot.

The beſt thing to deſtroy them is any thing of Salt; and therefore I believe that Sea-water would be a very great Improvement of Lands near the Sea that are troubled with them.

I had once a piece of very rank Clay Land that was very full of Worms, upon which I ſowed Soot, which killed ſeveral Buſhels of them: But I have try'd Soot upon other Clay Lands, and other Sorts of Land too, without finding of the ſame effect, whether it was becauſe of the difference of the Soil, or the time of the Year that I did it in, or whether it was becauſe the other Land was ſooted before, I could never yet find.

Some commend Chalk and Lime as very good to deſtroy them. The Winter fallowing of Land in a wet time when the Worms come upon the top of the Ground, is very good alſo to kill them, eſpecially if you drive ſome Nails with ſharp heads into the bottom and ſides of your Plow which will cut them to pieces.

If they are prejudicial in your Garden, water your Beds or Walks, with the Brine that you ſalted your Meat in, or with a ſtrong Lixivium made of Aſhes.

Or you may lay Aſhes or Lime about any Plant you deſire to preſerve from Snails or Worms, and they will not come near it; becauſe the hot biting nature thereof hurts their tender Bodies; only as the Rain or Moiſture weakens the Aſhes or Lime, you muſt renew it. Where Land is ſubject to Worms, ſow your Seed as ſhallow as you can.

Gnats and Flies. *Gnats* and *Flies* are very troubleſome in Houſes eſpecially ſuch as are ſituated near watery places, and do miſchief in the Fields by eating the Leaves of ſeveral things, as they come up firſt, eſpecially Turneps, ſo as ſometimes to deſtroy whole Fields.

To keep your Houſes clear of them, keep your Chamber Window's cloſe in Summer time, eſpecially towards Evening, and Smoak your Rooms well with Brimſtone, or burn Straw in them, which will cauſe them to fly into the Flame, and be conſum'd, or elſe the Smoak will choak them.

Aſhen-Leaves hanged up in the Room will attract them unto 'em that you will be leſs troubled with them.

Balls made of Horſe-dung and laid in a Room will do the ſame if they are new made; by which means you may whelm ſome things over them and keep them there.

Waſps and Hornets.

Waſps and *Hornets* uſually prove very injurious to ſome Sorts of Fruit, to Bees, *&c.* and are ſeveral ways deſtroyed.

Firſt, By way of prevention, that is in the Spring or Summer before they have increaſed, to deſtroy the old ones: For from a few they do increaſe to a Multitude.

Or you may ſmoke or ſtifle them if they are in a hollow Tree, or ſcald them if in the Thatch of an Houſe or Barn, *&c.* or in the Ground you may either ſcald or burn them, or ſtamp in the Earth upon them, and bury them.

To deſtroy ſuch as come to the Fruit, Bees, *&c.* ſet by them Cyder, Verjuice, ſowre Drink, or Grounds, in a ſhort neck'd Vial, wherewith you may catch many.

Alſo you may lay ſweet Apples, Pears, Beaſt Livers, or other Fleſh, or any thing that they love, in ſeveral Places; upon which you ſhall have ſometimes as many as will cover the Bait, which you may kill at once.

Catterpillars deſtroy the Leaves of Trees in Summer, devour Cabbages and other Garden Tillage; and are generally the Effects of great Droughts. *Catterpillasr.*

To prevent their numerous Increaſe on Trees gather them off in Winter, taking away the Prickets which cleave to the Branches, and burn them: But if they get on Colliflowers or Cabbages, take ſome Salt-water and water them with it, and it will kill them.

In the Summer while they're yet young, when either through the coldneſs of the Night, or ſome Humidity, they are aſſembled together on heaps, you may take them and deſtroy them, or you may waſh your Trees with Water, in which Wormwood, Tobacco ſtalks and Coloquintida has been boyled.

Earwigs in ſome Years prove injurious to Fruits by the greatneſs of their Numbers, feeding on and devouring them. *Earwigs.*

They are deſtroyed by placing Hoofs or Horns of Beaſts amongſt your Trees and Wall-fruit, into which they will reſort. Early in the Morning you muſt take them gently but ſpeedily off, and ſhake them into a Veſſel of Water.

By reaſon of great Droughts many Sorts of Trees and Plants are ſubject to *Lice*; and ſeeing they are cauſed by Heat and Drought, as is evident in the Sweet-bryar and Gooſeberry that are only louſie in dry Times or in very hot and dry Places; therefore frequent waſhing them by daſhing Water on them may prove the beſt remedy. *Lice.*

Ants or *Piſmires* are injurious to a Garden, and alſo to Paſture-Lands, as well by feeding on Fruit, as by caſting up of Hills, &c. *Ants.*

In the hotter Regions theſe Creatures are reckoned amongſt the Peſts of the Field, as in *Italy*, *Spain*, and alſo in the *Weſt-Indies*; yet are they commended as the Emblem of Knowledge and Induſtry, and were uſed by the *Egyptians* as the Hieroglyphick of Knowledge, every one of them laying up his own Store for the Winter, never robbing their Fellows, altho' they want themſelves.

To keep them from Trees, incompaſs the Stem four Fingers breadth with a Circle or Roll of Wooll newly pluck'd from a Sheep's Belly.

To anoint the Tree with Tar will do the ſame; but as Tar is prejudicial to Trees, I ſhould rather prefer Man's Ordure, which I believe will do beyond the other; becauſe if any of it be put into their Hills, it will kill them.

Alſo you may have Boxes of Cards or Paſt-board pierced full of holes with a Bodkin, into which Boxes put the Powder of Arſenick mingled with a little Honey: Hang theſe Boxes on the Trees, and they will certainly deſtroy them. Make not the Holes ſo large that a Bee may enter, leſt it deſtroy them too.

Alſo you may hang a Glaſs-bottle in the Tree with a little Honey in it, or moiſten'd with any ſweet Liquor, and it will attract the Ants, which you may ſtop and Waſh out with hot Water, and prepare it again as above.

Watering often of Alleys or green Walks will drive away or deſtroy the Ants that annoy them.

Ant-Hills prove a very great Injury to Meadows and Paſture-Land, not only by waſting of ſo much Land as they cover; but by hindring the Scythe, and yielding a poor hungry Food pernicious to Cattle.

To deſtroy their Hills, cut them into three or four Part, beginning at the Top, and open the Hills ſo as to dig out the Cores below the Surface ſo deep, that when you lay down the Turf in their Places, they may lie lower than the other Ground, to the End that the Water may ſtand in it to prevent the Ants from returning, which they will elſe certainly do: Then ſpread the Earth you take out thinly abroad. The proper Seaſon for the doing of which is in Winter, and if the Places be left open a certain time, the Rain and Froſt coming on it will help to deſtroy the reſt of the Ants: But be ſure to cover them up time enough that the Rain may ſettle the Turf before the Spring: The Price of doing of which, where a Man hath Fourteen-pence a Day, is Five-pence *per* Hundred.

In *Hertfordſhire* they have a particular Sort of Spade which by reaſon of the ſharpneſs of its Edges is very convenient for this Uſe: Its ſhape you have at Figure 1. and at Figure 2. is an Inſtrument much

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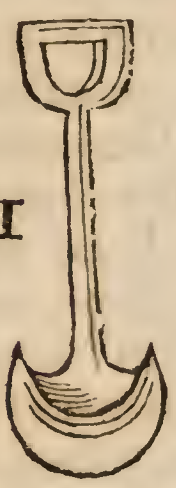

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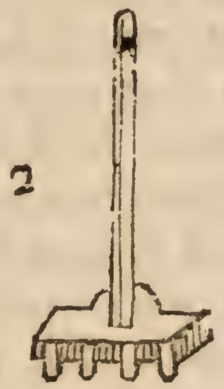

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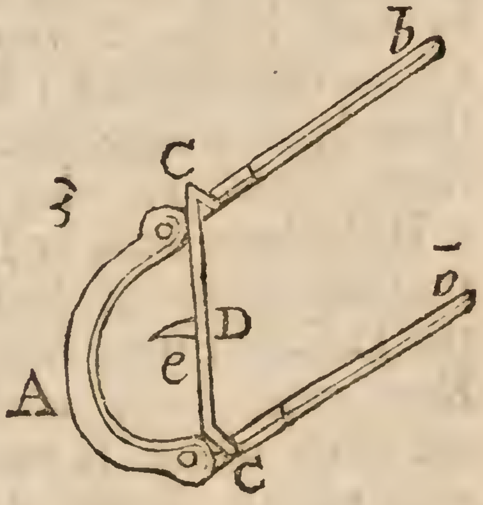


uſed in the Weſt Country for the ſpreading of Mole-caſts, the Teeth of which being Iron and broad, rakes out the Mould and ſpreads it; and at the other ſide where there is a kind of heel or knob, 'tis very convenient to break Clots with; but where there are great Quantities of Hills, and that you have a mind to make a quick Riddance of them, you may make uſe of the Engine at Figure 3. which at A hath a ſharp Iron about three Foot over with a ſtrong Back, 'tis a Bout four or five Inches broad; at *b b* are two Handles to hold it by; at CC are two Loops or Holes to faſten the Horſe Traces to that draws it; at D is a croſs Bar of Iron to ſtrengthen it, from which at *e* is a ſmall Piece of Iron like a Plough-ſhare to cut the Mole-Hill into two; or you may have two of the ſame Pieces of Iron which will divide the Mole-Hills into four Parts. With this Inſtrument, having one Horſe to draw it, a Boy to drive and a Man to hold it, you may cut as many Hills in a Day, as eight Men can do the common way; only as it cuts the Hills up by the Roots, ſo it leaves a bare Place under them which is ſome prejudice to the Land, but that may be ſown with Hay-ſeed, Clover, *&c.* and it will quickly have graſs on it. The Conveniency of which Inſtrument if it would engage People to the clearing of their Land of ſo great a piece of ill Huſbandry, as many in ſeveral Parts of *England* are guilty of, by letting of their Land be run all over by theſe Hills, it would I think be of very great uſe to the Publick: But many forbear to deſtroy them upon a ſuppoſition that they gain Ground by them, which is a very great Miſtake: For ſuppoſe a Hill whoſe Baſis or Diameter is twenty Foot, and that the Aſcent of the ſaid Hill is fifteen Foot, and the Deſcent fifteen more, which makes thirty Foot: Now every body will own that the Diameter of the Hill which is twenty Foot may be pailed in with twenty Deals of a Foot-broad, and the ſame Number of Deals will incloſe the Aſcent and Deſcent of the Hill alſo, becauſe the Boards ſtand perpendicular upon the ſides of the Hill; and therefore Graſs and Corn both growing upright, I do not think that any Land is gain'd either by Hills, or by the raiſing of Ridges.

BOOK VIII.

Chap. I. *Of the general Uſes of Corn, Grain, Pulſe, and other Seeds propagated by the Plough.*

Wheat.

WHEAT is the moſt general Grain uſed in *England* for Bread: Altho' it's not unfit for moſt of the Uſes the other Grains are fit for; as for Beer, a proportion of which being added to the Malt, helps much the keeping of it: If a little Wheat-bran is boiled in our ordinary Beer, it will cauſe it to mantle or flower in the Cup when it is poured out; which ſheweth with what a rich Spirit Wheat is endow'd, that ſo much remains in the Bran. If Wheat be malted, and a ſmall Quantity added to other Malt, it will add much to the ſtrength of your Beer; but it's ſomething more fulſome, being reputed to be a principal Ingredient in the making of Mum. Starch alſo is made of muſty, unwholſome Wheat, and of the Bran thereof, than which there are few things whiter.

Barly. The principal Uſe of *Barly* is for the making of Beer, being the ſweeteſt and moſt pleaſant Grain for that purpoſe: It is one of the beſt Grains for the fatting of Swine, being either boiled 'till it be ready to burſt, with no more Water than it drinks up, or ground in a Mill, and wet into Paſt, or made into a Maſh, either way it produces excellent Bacon.

Malt. *Malt* being an excellent Merchandice, and a Commodity of great Profit to the Huſbandman, and the making of good Beer depending much upon it (beſides the well brewing of it, which I ſhall defer the treating of, 'till I come to give an Account of *Engliſh Liquors*;) I think it may be of uſe to the Farmer to know when his Malt is well made, if he doth not make it himſelf: And likewiſe for the Improvement of our *Engliſh Liquors*, to conſider ſome of the ſeveral ways of making of Malt; in order to which I ſhall,

Firſt, Begin with the common way of making of Malt, as deſcrib'd by Mr. *Markham.*

Secondly, The way of making of Malt in *Derbyſhire*, according to the Deſcription given in Mr. *Houghton*'s Papers, and likewiſe tranſcribe the Account given by Sir *Robert Murray* in the Tranſactions of the Royal Society, of the way of making of Malt in *Scotland*, together with ſome other particular Obſervations, that I think may be of Advantage to the Maltſter and Farmer.

To begin with the Art of making (or, as ſome term it, melting) of Malt, according to Mr. *Markham*'s way; you muſt firſt (having proportion'd the Quantity you mean to ſteep, which ſhould ever be anſwerable to the Content of your Ciſtern, and your Ciſterns to your Floors,) let it run down from the upper Granary into your Ciſtern, or otherwiſe be carry'd into your Ciſtern, as you ſhall pleaſe, or your occaſions require. This Barly ſhould by all means be very clean, and when your Ciſtern is filled, you ſhould from your Pump or Well convey the Water into the Ciſtern 'till all the Corn be drenched, and that the Water float above it; if there be any Corn that will not ſink, you ſhould ſtir it about and wet it; and ſo let it reſt and cover the Ciſtern; and thus for the ſpace of three Nights you ſhould let the Corn ſteep in the Water. After three Nights are expired, the next Morning pluck out the Bung-ſtick or Plug, which ſtoppeth the Hole in the Bottom of the Ciſtern, and ſo drain the Water clean from the Corn, and ſave the Water: For much light Corn and other things will come forth with it, which is very good Swines-meat: Then having drained it, let the Ciſtern drop all that Day, and in the Evening with your Shovel empty the Corn from the Ciſtern into the Malt-floor; and when all is out and the Ciſtern cleanſed lay all the wet Corn on a great heap round, or long, and flat on the Top, and the thickneſs of this heap muſt be anſwerable to the ſeaſon of the Year; for if the Weather be extreme cold, then the heap ſhall be made very thick, as three or four Foot or more, according to the Quantity of the Grain: But if the Weather be temperate and warm, then ſhall the heap be made thinner, as two Foot, one Foot and an half, or one Foot; this heap is called by Maltſters a Couch or Bed of raw Malt.

In this Couch let the Corn lie three Night s more without ſtirring; and then if you find that it beginneth but to ſprout (which is called coming of Malt) tho' it be never ſo little, as but the very white End of the Sprout peeping out (ſo it be in the outward part of the heap or couch) then break it open, and in the midſt where the Corn lay neareſt you will find the Sprout or Come of a greater largeneſs, then with your Shovel turn over all the outward part of the Couch inward, and the inward outward, and make it at leaſt three or four times as big as it was at firſt, and ſo let it be all that Day and Night; and the next Day with your Shovel turn the whole heap over again, increaſing the largeneſs, and making it of one indifferent thickneſs over all the Floor, not above a handful thick, at the moſt, not failing after for the ſpace of fourteen Days (which doth make up in all) full three weeks) to turn it all over twice or thrice a Day, according to the Seaſon of the Weather; for if it be warm, the Malt muſt be turn'd oftner; if cool, then it may lie looſer, thicker, and longer together; and when the three Weeks are fully accompliſhed; then (having bedded your Kiln, and ſpread a clean Haircloth thereon) lay the Malt as thin as may be as about three Fingers thickneſs) on the Haircloth,) and ſo dry it with a gentle and ſoft Fire, ever and anon turning the Malt (as it drieth on the Kiln) over and over with your hand 'till you find it ſufficiently well dried; which you may know both by the Taſte when you bite it in your Mouth, and alſo by the falling off of the Come or Sprout, when it is throughly dried. Now as ſoon as you ſee the Come begin to ſhed, you muſt in the turning of the Malt rub it betwixt your hands, and ſcowre it to make the Come fall away; then finding it all ſufficiently dried; firſt put out your Fire, and let your Malt cool upon the Kiln for four or five Hours, and after the raiſing up the four Corners of the

Hair-cloth, and gathering together the Malt on a heap, empty it with the Come and all into your Garners, and there let it lie (if you have not preſent occaſion for it) for a Month or two to ripen, but no longer. For as the Come or Duſt of the Kiln for ſuch a ſpace melloweth and ripeneth the Malt, making it both better for Sale or Expence: So to lie too long in it doth ingender Weevels, Worms and Vermin, which deſtroy the Grain.

Now for the dreſſing and cleanſing of Malt you muſt firſt winnow it with a good Wind either from the Air or Fann, and before the winnowing you muſt rub it well between your Hands to get the Come or Sprouting clean away: For the Beauty and Goodneſs of Malt is when it is moſt ſmug, clean, bright, and likeſt to Barly in the View; for then there is leaſt Waſte, and greateſt Profit: For Come and Duſt drinketh up the Liquor, and gives an Ill-taſte to the Drink. After it is well rubbed and winnowed, you muſt then Ree it over in a fine Sieve, and if any of the Malt be uncleanſed, then rub it again into the Sieve 'till it be pure, and the rubbings will ariſe on the Top of the Sieve, which you may caſt off at pleaſure; and both thoſe rubbings, the Chaff and the Duſt which come from the Winnowings are very good Swine's-meat, mixt either with Whey or Swillings. And thus after the Malt is ree'd, either put it up in Sacks, or into a well cleanſed Garner.

Chap. II. *Certain Obſervations of Mr.* Markham's *about the Making of Malt.*

F*irſt*, He ſays there is a difference in Men's Opinions, as touching the conſtant time, for the mellowing and making of the Malt, that is, from the firſt ſteeping until the time of drying; for ſome will allow both Fat and Floor hardly a Fortnight, ſome a Fortnight and two or three Days, for theſe reaſons.

Firſt, They ſay it makes the Corn look whiter and brighter, and gets not ſo much of the ſullying and foulneſs of the Floor, as that which lieth three Weeks, which makes it a great deal more beautiful and ſaleable: Next it doth not Come or Shoot out ſo much Sprout as that which lieth a longer time, and ſo preſerveth more heart in the Grain, makes it bold and fuller, and ſo conſequently more full of Subſtance, and able to make more of a little, than the other of much more.

Mr. *Markham* ſays, theſe reaſons are good in ſhew, but not in ſubſtantial truth; for, altho' he confeſſeth that Corn which lieth leaſt time on the Floor, muſt be the whiteſt and brighteſt; yet that which wanteth any of the due time, can neither ripen, mellow or come to true perfection, in leſs than three Weeks, cannot ripen Barly; for what time it hath to ſwell and ſprout, it muſt have full that time to flouriſh, and as much time to decay. Now in a leſs than a Week it cannot do the firſt, and ſo in a Week the ſecond, and in another Week the third; ſo that in leſs than three Weeks a Man cannot perfect Malt. Again, he confeſſes that Malt which hath the leaſt Come muſt have the greateſt Kernel, and ſo be moſt ſubſtantial; yet the Malt which putteth not out his full Sprout, but hath that Moiſture (with too much heart) driven in which ſhould be expelled, can never be Malt of any laſting, becauſe it hath ſo much moiſt Subſtance, as makes it both apt to corrupt and breed Worms. It is true, that this haſt-made Malt is faireſt to the Eye; and being ſpent as ſoon as bought, little or no loſs is to be perceiv'd; yet if it be kept three or four Months longer (unleſs the place where it is kept be like a Hot-houſe) it will ſo give again, that it will be little better than raw Malt, and ſo good for no Service without a ſecond drying.

Beſides, Malt that is not ſuffer'd to ſprout to the full kindly, but is ſtopped as ſoon as it begins to peep, much of that Malt cannot come at all; for the moiſteſt Grains do ſprout firſt, and the hardeſt are longer in breaking the Huſk: Now if you ſtop the Grain on the firſt Sprouts, and do not give all leaſure to come one after another, you will have half Malt and half Barly.

Next, there ought great Care to be taken in the well turning of Malt, or elſe ſome will come too much, and ſome too little: And likewiſe in the coming or ſprouting of Malt, which as it muſt not come too little, ſo it muſt not come too much, and that which is called comed or ſprouted too much, is when either by negligence for want of looking to the Couch, and not opening of it; or for want of turning when the Malt is ſpread on the Floor, it Comes and Sprouts at both Ends, which is called *Acroſpired*, and is fit only for Swine; and therefore you muſt be ſure to have an eſpecial Care in ordering the Couch, to heap the hardeſt Grain inward and warmeſt to make it all come very indifferently together. And if it happens that your Barly is ſome old and ſome new Corn mixed together, you may be aſſured this Grain can never ſprout equally together, by reaſon the one exceedeth the other in Moiſture: Therefore in this caſe you muſt obſerve which comes firſt, which will be in the heart of the Couch, and with your hand gather it by it ſelf into a ſeparate place, and then heap the other together again, and ſo continue to do 'till all the other is ſprouted. And obſerve that if your Malt be hard to come or ſprout, and that the fault conſiſts more in the Coldneſs of the Seaſon, than any defect of the Corn, you may cover the Couch over with thick woollen Cloths, *&c.* the warmth whereof will make it come preſently; which once perceived, forthwith uncloath it.

Chap. III. *An Account of the way of making of Malt at* Derby, *as deſcrib'd in Mr.* Houghton's *Letters of Husbandry and Trade.*

THE Barley of which they uſually make Malt in *Derbyſhire*, is of two Sorts, either Sprat, or Long-ear, ſo called from the length of it; or Battle-door Barly, from the flatneſs of the Ear. Each of theſe is a like good for making Malt. In chooſing Barley for this uſe you muſt look that it be bold, dry, ſweet, of a fair Colour, thin ſkin, clean faltered from Hains, and dreſſed from foulneſs, Seeds, and Oats. Any one that is accuſtomed to it by barely handling the Corn in the Sack will eaſily perceive whether it be bold, dry and well dreſſed or not; the colour and Faſhion of it will enable you to judge whether the Huſk be thick or thin; the ſweetneſs is found by the Smell: For ſome will appear fair to the Eye, which by the ſmell we may find to have receiv'd ſuch hurt in the Mow as renders it unfit for Malting. If the Grains be of a dark Colour, and many Corns have brown ends, we may judge them to have been heated in the Mow, and they ſeldom come well in the Couch.

Having put what quantity of Barly we think fit into Ciſterns, we cover it with Water; eſteeming that drawn from the Brook, by reaſon of its fatneſs, much better than that from the Spring: In this we let it ſteep, till cruſhing the Corn, ſet end-ways betwixt our Fingers, the Huſk will riſe and ſhoot a little from it, then we draw off the Water and let it lie ſix, eight, ten or twelve hours to drain.

Now Barly bought about *Michaelmas* takes much leſs time in the Water, than afterwards when it has had the Sweat in the Mow. I ſuppoſe, becauſe the Pores of its Skin or Kernel are more open, and which ſome wonder at after a dry Year when it hath little Rain in the Field and none in Swath, it imbibes the Water faſter and is ſooner ſteeped, than when it hath plenty of Rain in the Growth, and ſome after it is cut before it be inned into the Barn.

Moſt experienced Maltſters judge it fit to give the Barly ſomething too little rather than too much Water, becauſe having imbibed too much, many Corns will ſmilt, or have their Pulp turn'd into a ſubſtance like thick Cream, which cruſhes out in ſtirring, others will have the Spirit drowned, and moſt of thoſe which come without extraordinary pains will ſend forth their ſubſtance in an Acroſpire.

The Barly being thus ſteeped enough and the Water well drain'd off, we throw it out upon the Couch-Floor; if the weather be immoderately warm we immediately Couch it about a Foot thick; but if we perceive it hath taken much water, or a hotter ſeaſon require it, we ſpread it on the Floor much thinner; yet if the weather be moderately cold, we let it lie twelve hours on a heap, the Edges being only ſwept cloſe up; after which, or a longer time in a Froſt, we ſpread it in ſuch a thickneſs as the weather and water it ſeems to have taken may require.

Thus laid it is ſtirred with the broad-caſting Shovel uſually thrice a day in moderate weather, but in cold only twice, and in hard Froſt when the outſides of the Couch are apt to freeze (for the middle will never) I have known them couched up a Yard thick cover'd with an Hair-cloth and ſtirred only once a day, the Malſter being always careful to throw the frozen outſides into the middle till the Corn begin to fork and warm in the Couch; after which time if it be not laid too thin, it will not eaſily freeze.

Sometimes in the hot Months of *May*, *June*, &c. the Maltſter will ſtir his Barly-Couches till the Sprit begins to fork, five or ſix times a day or more; it being always his care to keep them from drying too much on the outſides, leſt they again be parched into Barly. But all his care in Summer is ſometimes too little, for the heat will ſo dry the Barly, that tho' it ſeem to come well yet wanting moiſture to put an Acroſpire back, Malt proves but harſh and hard.

The Barly after it has been couched four or five days in cold weather will ſweat a little, and begin to ſhew the Chit or Sprit at the root end of the Corn, and in four or five days more (during which time it continues ſweating, as is eaſily ſeen by ſtroaking of the drier top of the Couch) it will become long enough; but now except the weather grow cold, it muſt ſtill be laid thinner, and ſtirred three times a day or four; when the Come is long enough, at leaſt in Summer, I have known it Chit in 24 hours after it had been thrown forth of the Ciſtern, and within three days come enough, the Malſter being forced to ſtir it ſix, ſeven or eight times a day, to keep it from running out, or the Sprit from coming too long: ſometimes I have known the Chit to peep before the Ciſtern was emptied in the heat of Summer, but this was only at the top of the Ciſtern: and in ſuch a caſe it is the chief art of the Maltſter to make the Barly Come even in the Couch.

It is a laborious time to the Maltſter when Barly begins to grow in the Fields in the Spring, for that in the Couch by ſome kind of Sympathy will be ſo active, that it will require extraordinary much ſtirring to keep it from coming too long, or emptying the pulp of the Corn in Sprits, which it is his care to prevent, not only leſt it ſhrink the Corn in meaſure, which it will do ſomething; but alſo leſt it leave him only the Huſk of the Corn inſtead of Malt.

When the Malt is come enough, we throw it thinner on the Floor, to wither it, and ſtir it once or twice that day extraordinary. When it is once ſtopt with ordinary care and ſtirring, it will be kept from coming. The Corn is uſually come enough,

nough, when the Sprits are about half an Inch long, but in Summer let it come a little longer than in Winter, to make the Malt raſh. If it be come too much it will look rugged, and be apt to ſtick together, and when ſtirr'd it will fall uneven, or on heaps: then being ſtay'd from coming, we remove it into our upper Floors, where we keep it with ſtirring in hot weather three, four or five times a day, to wither it as neceſſity requires.

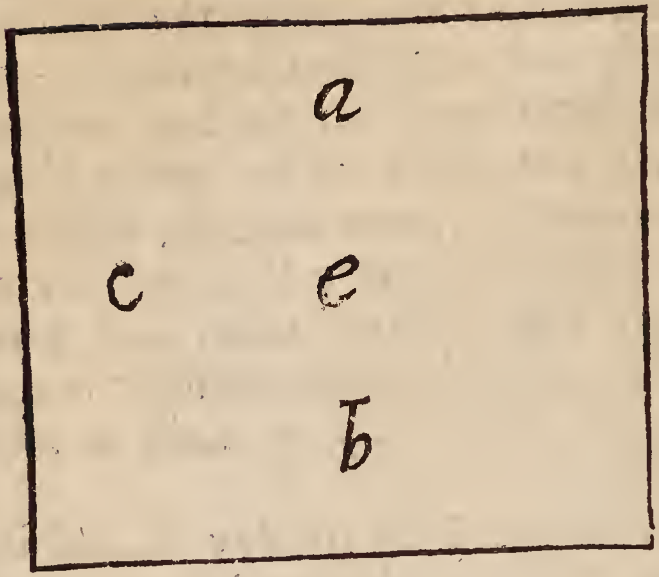
One thing I muſt not omit, ſince many Malſters are ignorant of it; when the Sprits come forth at the root end of the Corn, another Sprit which we call the Acroſpire begins to ſtir at the ſame end, and as the exteriour Sprits run faſt out, it moves ſlowly backward under the Skin unſeen, and when they are come long enough, it is ſeldom gone further back than the middle of the Corn; but if the Malt afterwards be not cooled too haſtily, or caſt over thin on the withering Floor, this will run back to the end of the Corn, to which if it reach not, the part of the Corn which it paſſeth not, will remain unmalted, the reſt will be perfect Malt. But if for want of ſtirring the Malt, or giving the Barly too much water in the Ciſtern, both which cauſe it, the Acroſpire come out, it carries forth with it the heart of the Corn, and leaves little but Huſk, eſpecially if it get length, as before intimated.

After the Malt has lain on the withering Floors about twelve or fourteen days, it will be fit for the Kiln, or ſooner, if it begin to Acroſpire; yet in ſharp froſts it will ſcarce be ready in three weeks.

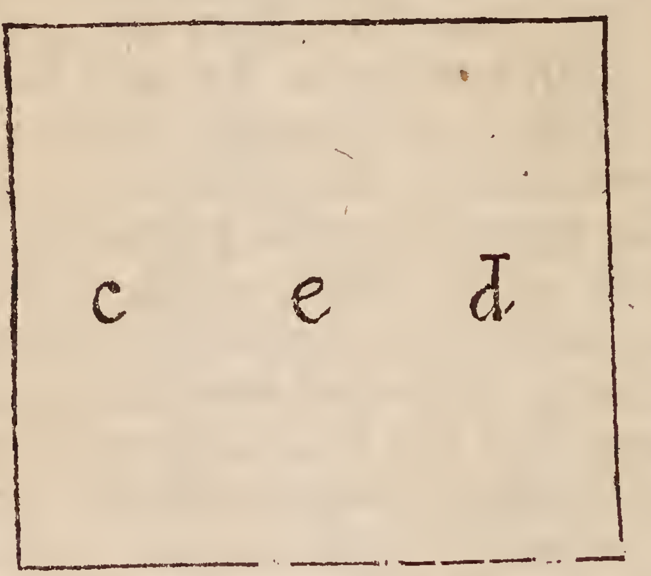
In Summer time and hot weather the Corns that are bruiſed by the Maltſters Feet or Shovel in ſtirring, will be apt to mould, and the Malt if kept but a little too thick, or omitted when it ought to be ſtirred, will Acroſpire; and if to prevent the acroſpiring it be thrown thin, many Corns will dry and parch into Barly again. Moreover in thoſe that Come, the Acroſpire will ſcarce run back to the middle of the Corn, ſo that one half of it will be left Barly, which is the cauſe why the Summer made Malt brews ill, and is diſliked by moſt of our Ale-brewers. The Malt made in the hot weather of the Summer will not abide to lie above ſeven days on the Floor after it is come enough, before it be convey'd to the Kiln, by reaſon it is apt to contract mould, which has a bitter taſte, and gives Drink an ill Reliſh; but when the weather is cool in Summer, as good Malt may be made as after *Michaelmas*.

The Malt is laid on the Kiln to dry ſomething thicker than it lay on the withering Floor, where when it has lain five hours with conſtant fire under it, the Maltſter gives it the firſt turn; about four hours after, the ſecond, and ſome three hours after that, the third. And if the Kiln dry well in three hours more with a moderate fire (for fear of fire-fanging) it will be dry'd enough: Thus it lies about fifteen hours on the Kiln, ſometimes more, and ſometimes leſs, according to the goodneſs of the Kiln and greenneſs of the Malt, which if it be not well withered before it be laid on the Kiln will require a longer time to dry and one turn on the Kiln extraordinary. But the Brick-kiln will dry a greater Quantity in four, than we uſually lay on one of the ſame Capacity of the common make in twelve hours. The ways of turning the Malt on the Kiln are various, the beſt eſteemed, but troubleſome, is thus.

Our Kilns being all of them four-ſquare, we begin at any ſide, and with the broad Shovel caſt up all the green Malt on it into two heaps in the oppoſite corners, the drieſt next the Hair-cloth into the middle ſpace betwixt them: As if we began at the



middle *e*, we throw all the green Malt into two heaps in the oppoſite ſide *a* and *b*, but the little dry next the Hair-cloth betwixt them to *c*; then having ſhaken up the Hair-cloth ſo that no looſe Corns may ſtick to it, and again laid it down very ſtreight, we remove the green heaps to the oppoſite ſides *d c*, as in this Figure, but the little middle heap, with the dry under the other two, the ſhakings of the Cloth, after they are removed to the ſpace betwixt them *e*; then again compoſing the Hair-cloth, we firſt caſt down the two green heaps all over it of an uneven thickneſs, and the dry heap all over them, thus the greeneſt is turned to the bottom, and the dry lies on the Top. Afterwards the Malſter rakes it all over with a wooden Rake, to leave it every where of as even a thickneſs as poſſibly he can.



But the moſt uſual, though not ſo much approved way is this; the Malſter throws all the Malt on the Kiln on one cloſe heap, in the middle of it, then ſhakes up his Hair-cloth, which being laid down again very even, he caſts the ſaid heap abroad again round the Kiln, clearing the Hair-cloth all that breadth where it lay, or ſomething wider, which place he ſweeps clean with a Broom, leſt any Corns ſticking to it, ſhould be fire-fanged, then he fills up the ſaid ſwept place with Malt caſt into a round from the ſides, and raking it very even, leaves it.

His Malt being dry'd enough he removes it from the Kiln, and laying it above a Foot thick, treads it round three or four times, beginning at the outſides, and winding himſelf round, till he hath trod up to the middle of the heap, and ſo back to the outſides again; this he calls a courſe, and in going two or three ſuch courſes his Malt, if well dried, will be trodden enough, that is all the Come will be rubbed off; then if the Malt be to be kept long he throws it upon a heap in the Duſt; but if it be to be ſold within two or three Months after, he dreſſeth the Duſt from it by running it thro' a Fan or Frie, that ſo it may take the Air better in the heap and become more mellow. When Malt is to be uſed, it is beſt to have it ground ten or twelve days before it be brewed.

Chap. IV. *An Account of the manner of making Malt in* Scotland, *by Sir* Robert Murray, *according to the method given by him in the Tranſactions of the Royal Society.*

MALT is there made of no other Grain but Barly, whereof there are two kinds; one which hath four rows of Grain on the Earth, commonly called Big, and the other two rows. The firſt is the more commonly uſed; but the other makes the beſt Malt.

The more recently or ſooner Barly hath been thraſhed it makes the better Malt. But if it hath been thraſhed ſix weeks or upward, it proves not good Malt, unleſs it be kept in one equal temper; whereof it eaſily fails, eſpecially if it be kept againſt a Wall: for that which lies in the middle of the heap is freſheſt, that which lies at the outſides and at top is over dried, that which is next the Wall ſhoots forth, and that which is at the bottom rots. So that when it comes to be made into Malt, that which is ſpoiled does not come well (as they call it) that is, never gets that right mellow temper Malt ought to have, and ſo ſpoils all the reſt. For thus ſome Grains come well, ſome not at all, ſome half; and ſome too much.

The beſt way to preſerve thraſhed Barly long in good temper, is not to ſeparate the Chaff from it: but as long as it is unthraſhed it is always good. Brewers uſe to keep their Barly in large Rooms on boarded Floors laid about one Foot in depth, and ſo turned over now and then with Scoops.

Barly that hath been over-heated in the Stack or Barns before it be ſeparated from the Straw, will never prove good for Malt nor any other uſe. But though it heat a little after it is thraſhed and kept in the Chaff, it will not be the worſe, but rather the better for it; for then it will come the ſooner and more equally.

A mixture of Barly that grew on ſeveral Grounds, never proves good Malt, becauſe it comes not equally. So that the beſt Barly to make Malt of, is that which grows in one Field, and is kept and thraſhed together.

Take then good Barly, newly thraſhed and well purged from the Chaff, and put thereof eight Boles, that is about ſix *Engliſh* Quarters, in a Stone-trough, where let it infuſe, till the water be of a bright reddiſh Colour; which will be about three days more or leſs according to the moiſtneſs and drineſs, ſmallneſs or bigneſs of the Grain, ſeaſon of the Year, or temper of the Weather. In Summer Malt never makes well; in Winter it will need longer infuſion than in the Spring or Autumn.

It may be known when ſteeped enough, by other marks beſides the Colour of the Water, as the exceſſive ſwelling of the Grain; or if over ſteeped, by too much ſoftneſs, being, when in the right temper, like that Barly which is prepared to make Broth of, or the Barly called by ſome *Urgewonder*.

When the Barly is ſufficiently ſteeped, take it out of the Trough, and lay it in heaps, ſo let the Water drain from it; then after two or three Hours turn it over with a Scoop, and lay it in a new heap about twenty four Inches deep. This heap they call the Coming heap, and in the managing of this heap aright lies the greateſt ſkill. In this heap it will lie forty Hours more or leſs, according to the forementioned qualities of the Grain, &c. before it come to the right temper of Malt, which that it may do equally is moſt to be deſired.

Whilſt it lies in this heap, it is carefully to be looked unto, after the firſt fifteen or ſixteen Hours. For about that time, the Grains will begin to put forth the Root, which when they have equally and fully done, the Malt muſt within an Hour after be turned over with a Scoop; otherwiſe the Grains will begin to put forth the Blade or Spire alſo: which by all means muſt be prevented: For hereby the Malt will be utterly ſpoiled, both as to pleaſantneſs of taſte and ſtrength.

If all the Malt come not equally, becauſe that which lies in the middle being warmeſt, will uſually come firſt, turn it over, ſo as the outmoſt may lie in-moſt, and ſo leave it 'till all be come alike.

So ſoon as the Malt is ſufficiently come, turn it over to a depth not exceeding five or ſix Inches, and by that time it is all ſpread out, begin and turn it over and over again three or four times. Afterwards turn it over in like manner once in four or five Hours, making the heap thicker by degrees, and continuing ſo to do conſtantly for the ſpace of forty eight Hours at leaſt.

This frequent turning of it over cools, dries and deads the Grain: Whereby it becomes mellow, melts eaſily in brewing, and ſeparates entirely from the Huſk.

Then throw up the Malt into a heap, as high as you can, where let it lie 'till it grows all as hot as your hand can endure it; which uſually comes to paſs in ſome thirty Hours ſpace; this perfects the Sweetneſs and Mellowneſs of the Malt.

After the Malt is ſufficiently heated, throw it abroad to cool, and turn it over again about ſix or eight Hours after, and then dry it upon the Kiln; where after one Fire, which muſt ſerve for twenty four Hours, give it another more ſlow Fire; if need be, a third. For if the Malt be not throughly dried, it cannot be well ground, neither will it diſſolve well in brewing, and the Ale it makes will be red, bitter, and will not keep.

The beſt Fuel is Peat, the next Charcoal made of Pit-coal or Cinders; Heath, Broom and Furzes are naught. If there be not enough of one kind, burn the beſt firſt, for that gives the ſtrongeſt Impreſſion as to the Taſte.

Chap. V. *Some farther Obſervations relating to Malt.*

SOme are of Opinion that the beſt and moſt natural way of drying Malt is in the Sun in the Months of *April* and *May*, eſpecially for thoſe that make but ſmall Quantities for their own uſe, this making not only the paleſt but the moſt kindly, and wholſome of all others. The Drink made thereof hath a delicate Mildneſs, being of a warming exhilarating Quality, not ſo apt to heat the Body, nor ſend fumes into the Head. In all hot Seaſons it may be done, every Man drying enough for his own Uſe; alſo it may be done to great Advantage in hot Countries.

Some of late have cover'd their Kilns over with Wyer inſtead of Hair-cloth, which is much the better way; for this doth not only dry it ſooner, but cleaner and much ſweeter; for by the means of this Grate, as it may be called, the properties of the Fire paſs away more freely, and ſweetning Vapours of the Air are not ſo much hindred from circulating, and therefore not ſo much Humidity contracted; but their Cloths are thick, which prevents the fiery ſulphurous Vapours from paſſing away, but are as it were beat back, and ſo do with great Violence ſeek their Centre whence they proceed; that is re-enter the Fire; but finding no agreeable matter to incorporate with, they become more intenſe and raging, and ſo with a rapid Motion aſcend, whereby the Heat that comes thro' the Cloth is ſtill more ſtupifying, groſs, ſulphurous and hurtful to the Malt, as is moſt manifeſt by the Airs in all cloſe places, as where Stoves are, the Air having no free Circulation; beſides they are more cleanly and apt for the purpoſes, and the Malt will be whiter and afford more lively and briſk Spirits.

In *Hertfordſhire* they dry their Malt both with Wood and Straw ſo fine, that it ſhews finer than the Barly it was made of, giving both the ſame Colour and Taſte to the Drink as the *Derbyſhire* Malt: I having near *Royſton* drank as good Ale brewed with it, as any that either *Derby* or *Nottingham* affords, and of the ſame Flavour and Taſte; which they make ſo fine, as they tell me, by conveying of the Smoak from it, and by giving fifteen or ſixteen Hours time to the Malt to dry on the Kiln; whereas according to the common way, they do not uſe to allow above four or five Hours, making good that old ſaying, *That ſoft Fire makes ſweet Malt:* But this ſort of Malt is not ſo profitable as the other, being three or four Shillings in a Quarter dearer. And whereas the common Malt increaſeth a Buſhel in a Quarter; it's rare if forty Buſhels of Barley at *Derby*, produce forty Buſhels of Malt. But I hope it will prove of advantage to improve our *Engliſh* Li-

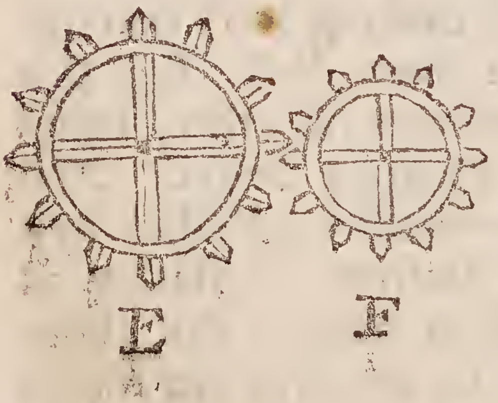
Liquors, eſpecially in our Southern Parts, where they have generally very bad Malt-drink.

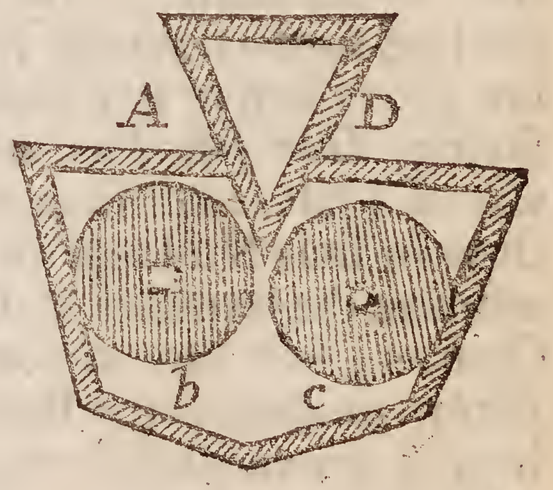
And tho' I have been very curious in getting ſome of the beſt ſorts of both *Nottingham* and *Derby* Ales, I muſt ſay the beſt Ale that ever I drank was at *London*, which was brewed with half *Nottingham*, and half *Hertfordſhire* Malt, made the common way. And is the beſt ſort of Liquor if well brewed, and the Malt good: To try the Goodneſs of which, put a ſmall Quantity into a Glaſs of Water, and what ſinks is good, but what ſwims is naught.

Note alſo, that Wood cut five or ſix Years, and laid up dry, is one of the beſt Fuels to dry Malt with.

I ſhall farther, for the Conveniency of the Malt-Trade, add a particular ſort of Mill that I think will be of good uſe for the grinding of it, and much more ſubſtantial and laſting than the common Mills, without being ſo often out of order, and which I believe will grind a much greater Quantity than the common Sorts of Hand-mills do. I muſt confeſs, that all the Trial I had of it was with one that I made with Wood, not being able to procure a Workman in the Country who could make one of Iron; however that did ſo well that I can no way doubt the Performance of it in Iron.

It has this particular Advantage, that it will not grind any of the Malt to Powder, but will ſqueeze or flat it only according to the diſtance you ſet your Rollers, which is a great Advantage in brewing.





It is made after this manner, A is the Caſe of the Mill, *b c* is the End of two Iron Rollers that are about four Inches Diameter, and which may be a Foot and a half, or two Foot and half long, according as you will have it to be turned by one or two Men: Theſe Rollers muſt be ſet at ſuch a diſtance from each other, as to break a ſingle Grain of Malt, ſo much as you deſire to have it broke. At D is a Hopper, the breadth of the bottom of which muſt be juſt half the length of a Barly-Corn, and near as long as the Rollers, that it may not feed them too faſt. At one end of the Roller *b*, muſt be put a Winch with the Wheel at E, and another ſmaller Wheel at F to be put on the Roller *c*, if you turn it but with one Man; but if you turn it with two Men, you may have only two Winches one to each Roller, for one Man to turn againſt the other; only you muſt obſerve that one of the Men muſt not turn quite ſo faſt as the other, becauſe 'tis apt to make the Mill feed too faſt.

Oats are the beſt Grain for Horſes, tho' in hot Countries where Oats do not thrive well, Barly is uſed for that purpoſe: But there is no Grain ſo wholſome for them as Oats are, and being malted like Barley, they make a pretty Sort of Drink, eſpecially if mixed with other Malt, as they do in many places in *Kent*, where they commonly brew with one half Oat-malt, and the other half Barly-malt. Beſides, the uſefulneſs of it for Bread-cakes and Oatmeal. 'Tis a Grain that Poultry love to feed on, and they are reckon'd to make them lay more Eggs than any other Sort of Grain.

Peaſe. The common Uſe of Pulſe is generally known as well for Man as Beaſt, but there are ſeveral that pretend to extract from them excellent Liquors, and to diſtil very good Spirits, or *Aqua Vitæ*, without malting, as one (in a certain Tract publiſh'd by Mr. *Hartlib*) pretends that Rye, Oats, Peaſe, and the like inferiour Sort of Grain, handled as Barley until

til it ſprout, it needing not for this Work to be dry'd, but beaten and moiſten'd with its own Liquor, and ſoundly fermented will yield a mighty Increaſe. He alſo affirms, that out of one Buſhel of good Peaſe will come of Spirit at leaſt two Gallons or more, which will be as ſtrong as the ſtrongeſt Aniſeed-water uſually ſold in *London.* He afterwards in the ſame Tract gives the particular Proceſs, which is thus:

Let Peaſe be taken and ſteeped in as much Water as will cover them, 'till they come and ſwell, and be order'd as Barley is for malting, only with this difference, that for this Work if they ſprout twice as much as Barley doth for malting 'tis the better. The Peaſe thus ſprouted, if beaten ſmall, which is eaſily done, they being ſo tender, and put into a Veſſel ſtopt with a Bung and Rag as uſual, they will ferment, and after three or four Months, if diſtilled, will really perform what is promiſed.

Thus, he alſo adds, may be made a Spirit or *Aqua Vitæ* out of any green growing thing, as Roots, Berries, Seeds, *&c.* which are not oily.

Alſo that the Spirit which is made out of Grain not dried into Malt, is more pleaſant than the other.

'Tis not unlikely that Grain may afford its Tincture, and that excellent Beer and Ale may be made thereof without malting, but I ſhall leave theſe things to experience

BOOK IX.

Chap. I. *Of ſeveral Sorts of Inſtruments, Tools and Engines neceſſary for the Husbandman's Uſe.*

THere being ſeveral Sorts and Kinds of Inſtruments that are for the Huſbandman's Uſe, without the Knowledge of which, it will be impoſſible to go through the Difficulties of this Art; as *Virgil* obſerves,

The hardy Plow-man's Tools, we next muſt know,
Which wanting, we can neither Plow nor Sow.

Amongſt the Number of which are his Ploughs, Carts, Waggons, *&c.* and it being difficult and unprofitable to make uſe of ſuch as are heavy, cumberſome and chargeable, when the ſame Work may as well be performed, if not better, with ſuch as are eaſie, light, and not ſo coſtly, and with leſs labour; I ſhall endeavour to deſcribe to you ſuch as are the beſt and moſt proper for each particular Sort of Work, according to ſuch Method and Ways as have of late been diſcover'd to facilitate Work.

Ploughs. For the *Plough* I have already given an Account of that uſeful Inſtrument, and therefore ſhall now proceed to conſider ſuch other Inſtruments as are uſeful for the Farmers buſineſs, amongſt which his Carts and Waggons may be eſteemed ſome of the chief, moſt neceſſary and coſtly, of which there are ſeveral Sorts, and for ſeveral Uſes, as for carriage of Timber, Corn, Dung, and ſuch like; all differing the one from the other according to the ſeveral Places where they uſe them, and that the Countries are Hilly, Level, Stony or Clayie. In ſome Places they are much more curious in the forming of them than in others, making them neater, lighter and ſlenderer, as well in the Wheels as in other Parts. And ſo for the form of the Wheels, ſome make them more Diſhing, as they call it, than others, that is, more Concave, by ſetting of the Spoaks and Felloes more outwards, which they reckon the ſtronger, becauſe the great ſtreſs of a Wheel is when a Cart or Waggon falls on one ſide into a hole, which occaſions the Spoaks that are underneath by the declining of the Waggon to come to a Perpendicular. And the larger a Wheel is, the eaſier is the Draught, becauſe the ring or round of the Wheel is more flat, and doth more eaſily paſs over Stones, or other Obſtructions in the way, and ſinks not ſo eaſily into the Cavities or defective Places of the Earth; its motion is alſo ſlower at the Center, for a Wheel of eighteen Foot circumference goes but once round, where one of nine Foot muſt go twice, and ſo proportionably; the Advantage of which is confirmed by the Opinion of ſeveral.

Chap. II. *An Account of ſome Experiments, which you have in the Tranſactions of the Royal Society, which, as they may be of uſe to the curious, ſo may alſo ſerve for the improvement of our Carriages, and conſequently both of Husbandry and Trade, which I ſhall give as inſerted in the Tranſactions in the fifteenth Volume, p.* 856.

HAving read in the Mechanicks of *Merſenus*, *Herigon* and Dr. *Wallis*, that the larger the Wheels of a Coach, *&c.* are, the more eaſily they may be drawn over a Stone or ſuch like Obſtacle that lies in their way, I was willing to try ſome Experiments which I thought might convince ſome Men better of the Truth of it, than by a Mathematical Demonſtration.

I therefore ordered a Model of a part of a Waggon to be made, conſiſting of four Wheels, two Axes, and a Board nailed upon the Axis. The leſſer Wheels were four Inches and three quarters of an Inch, and the bigger Wheels five Inches and two thirds of an Inch high, *&c.* One twelfth part of the ordinary height of the Wheels of a Waggon, the weight of the Model was almoſt a pound and a half; I had alſo two other Wheels made that were five Inches and two thirds of an Inch high, to put on inſtead of the leſſer Wheels. The middle of the two Axes were ſix Inches and a quarter aſunder, all the Wheels turned very eaſily upon the Axes.

A piece of Lead of fifty Pound and three fourths *Averdupois*, was laid upon the Model ſo forward, that the leſſer Wheels ſeemed to bear above two third parts of the Weight. Then the Model was drawn with a ſtring laid over a Pully, the top whereof was one quarter of an Inch higher than the top of the hinder Axis, and the middle of the fore Axis.

The leſſer Wheels being put on, and the ſtring being tied to the top of this Pully ſeven Inches and a half from the middle of the fore Axis.

1. Three Pounds drew the Model on the ſmooth level Table.

2. Twenty Pounds drew the leſſer Wheels over a ſquare Rod one quarter of an Inch thick.

3. Thirty Pounds drew them over a round Rod a little more than half an Inch thick.

4. Thirty one Pounds drew them over a ſquare Rod half an Inch thick.

5. Twelve Pounds drew the hinder Wheels over the bigger ſquare Rod.

The String being laid under the Axis, *viz.* Five-eight parts of an Inch lower than before.

6. Twenty nine Pounds drew the leſſer Wheels over the bigger ſquare Rod.

Then the two bigger Wheels being put on inſtead of the leſſer, and the String lying over the Axis.

7. Three Pounds drew the Model on the Table.

8. Twenty five Pounds drew the fore Wheels over the round Rod.

9. Twenty five Pounds drew them over the bigger ſquare Rod.

10. The String lying under the Axis, ſixteen Pounds drew them over the leaſt Rod.

11. Twenty three Pounds drew them over the round Rod.

12. Twenty three Pounds drew them over the bigger ſquare Rod.

13. Thirteen Pounds drew the hinder Wheels over the bigger ſquare Rod.

All theſe Experiments were tried twice at leaſt, and moſt of them three or four times over.

In all of them the Lead was laid exactly upon the ſame part of the Board, but yet when the leſſer Wheels were taken off, the Lead did not lean ſo much forward, ſo that the hinder Wheels were ſomewhat more preſſed than they were before.

Now by comparing the ſecond, third and fourth Experiments, with the tenth, eleventh, and twelfth, it appears how much more eaſily a Waggon, *&c.* might be drawn in rough Ways, if the fore Wheels were as high as the hinder Wheels, and if the Thills were fixed under the Axis, ſuch a Waggon as this would likewiſe be drawn more eaſily where the Wheels cut into Clay, or Sand, or any ſoft Ground. And moreover, high Wheels would not cut ſo deep as low Wheels, as Dr. *Wallis* doth plainly demonſtrate, beſides ſome other advantages which he mentions.

Indeed low Wheels are better for turning in a narrow compaſs than high ones: But it ſeems probable that Waggons with four high Wheels might be ſo contriv'd, that there ſhould be no great inconvenience in that reſpect, at leaſt for ſuch Waggons as ſeldom have occaſion to turn ſhort, as Carriers Waggons and ſuch like.

The difference which you may obſerve in the eighth and eleventh Experiments, which is agreeable to what is ſaid by *S. Stevinus* and Dr. *Wallis*, *viz.* That if a Coach, *&c.* muſt be drawn over rough uneven places, 'tis beſt to fix the Traces of the Coach lower than the height of the Horſes Shoulders. And therefore that is not the beſt way which ſome Waggoners uſe, who ſometimes putting their Horſes in pairs, hook the Chain of ſome of the Horſes to the Cheſt of the Waggon higher than they need to do.

14. A Table two Foot and a half long, was ſet with one end, eight Inches and a half higher than the other, and the Model being loaded as before, leſs weight by ſix Ounces, drew it up the Table when the four bigger Wheels were on, than when the two bigger and the two leſſer were on.

The reaſon of this is given by Dr. *Wallis*, and other

ther Writers of Mechanicks, *viz.* Becauſe in the firſt Caſe, there was almoſt the ſame direction of the motion of the Model, and of the String that drew it, but not in the ſecond Caſe, when the fore Axis was ſo much lower than the top of the Pully.

For the ſame reaſons 'tis that Carts having larger Wheels are much eaſier drawn than Waggons, but they have likewiſe another advantage, in having but one Axle-tree, for any thing drawn upon two Wheels is much eaſier than four, becauſe of the double rubbing of the two Axle-trees, the rubbing of which is the main thing that occaſions the Draught, elſe any thing drawn on Wheels would go as eaſie as on Ice, and becauſe a ſmall Axle-tree rubs leſs than a large, is the reaſon that Iron Axle-trees, though much heavier, are better than thoſe of Wood. In *Oxfordſhire* they make their Carts with Iron Axle-trees, that are fixed in one Wheel and turn in the other, which they ſay much eaſes the Draught. 'Tis certain, it eaſes the rubbing of one Wheel, but whether that may eaſe the whole Draught, I cannot poſitively determine, though I am apt to think it may. But though Carts are of much eaſier Draught in plain Countries, they are not convenient for travelling, becauſe when loaded, in uneven Ways, they bruiſe the Fill-horſes Sides, and often indanger the breaking of their Backs.

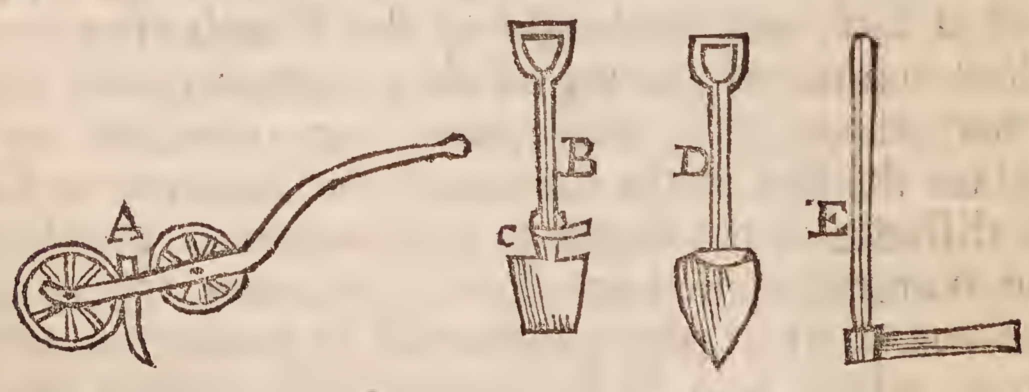
Likewiſe the higher a Cart or Waggon is ſet, the more apt 'tis to over-turn, and becauſe the ſetting of it low, and the height of the Wheels after the uſual manner of placing of them cannot conſiſt together, therefore it may prove very commodious to place the Bed of the Cart under the Axle-tree at ſuch a diſtance as the depth or ſhallowneſs of the Ways or Waters you are to go through requires; for by this means, part of the weight will be under the Axle-tree, which will ſo far counterpoiſe what is above it, that it will very much prevent the over-ſetting of both Carts and Waggons.

They are much more curious in making of their Carts and Waggons in *Holland* than we are, in that they make them very neat and high, ſo that one Horſe will draw as much as two with our cumberſome heavy ones, but their Roads are good and even, which gives them a great advantage.

I ſhall not here mention any thing of the Sailing Waggons, and ſeveral other contrivances of that kind, till I find them brought to greater Perfection, only one ingenious Contrivance I have heard of, of a Gentleman in *Wales*, who having a Coalpit near the Sea, from which to the Water-ſide is a plain deſcent all the way, he loads his Coals in Waggons, for the Wheels of which he hath made Grooves or Chanels to run in, by which means, and the having of Sails for them, they tell me, that the Wind carries them loaded to his Wharf, and that being unloaded one Horſe draws them up the Hill again.

Chap. III. *Of ſeveral Inſtruments uſed for Digging of Ground*, &c.

THere are ſeveral Inſtruments I need not deſcribe, becauſe the very naming of them will be ſufficient; and therefore thoſe that I ſhall deſcribe, ſhall be only ſome of the moſt uncommon and moſt uſeful, or that have ſomething peculiar from the common Sort, and that are only uſed in ſome particular Parts.



I ſhall begin firſt with the *Trenching-Plough* or Coulter, which is a certain Inſtrument uſeful in Meadows or Paſture Ground, to cut out the ſides of Trenches, Carriages or Drains, it is alſo uſeful to cut out the ſides of Turf, for the taking of it up whole, to the intent to lay it down again in the ſame place or ſome other. It hath only a long Stale or Handle with a Button at the end for ones Hand, and at the other end it turns upward like the Foot of a Plough, to ſlide in the Ground, in which bend is placed a Coulter or Knife of the length you intend the depth of the Turf to be, the faſhion of which you may ſee at A.

Several faſhions there are of them, ſome with one Wheel, ſome with two, and ſome with none, you may make them as you pleaſe.

There are alſo many Sorts of *Spades* according to the diverſity of places, and the ſeveral occaſions and humours of Men.

At B is the ſhape of a Spade much uſed in *Eſſex*, the broad part of which is all Iron, the Handle going into a Socket at *c*, where is a piece of Iron to ſet the Foot on to dig with, which may be ſet on either ſide, according to the Foot the Occupier uſes. This is one of the beſt Spades I have met with to dig hard lumpy Clays, but 'tis too ſmall for light Garden Mould.

At D is a Spade made uſe of in the Fenns in *Lincolnſhire*, the Edges of which are as ſharp as a Knife, which makes it eaſie to cut Flag-roots, and the Roots of other Weeds, and indeed is very uſeful in any Lands that have not Stones in them; ſome of theſe Spades are made with one ſide turned up like the Breaſt-plough, by which means they with once jobbing of it into the Ground, can cut an exact Turf, ſo that one Man with one of theſe Spades in fenny ſoft Ground, will do as much in a day as two Men with a common Spade.

At E is a very convenient Inſtrument to dig hard Gravels, or ſtiff Clays, or chalky Lands with when hard. But if you make one of theſe Inſtruments about

bout ſixteen Inches long, and four or five broad, making it every way ſtrong in Proportion, into which put a long ſtrong Handle, this Inſtrument is very uſeful to dig ſtrong Clays with, eſpecially in Summer, when it will riſe in large hard lumps, the way of uſing of which is after this manner, firſt dig a ſmall Trench ten or twelve Inches deep, and about three Foot from this Trench let a Man drive down the Inſtrument into the Ground with a Beetle, and let two Men, having hold of the Handle when the Iron part is drove into the Ground, raiſe up the end of the Handle, and it will raiſe the Earth up with it in lumps as far as the Trench that was firſt cut; ſometimes in hard Grounds I have known as much raiſed at once as would near fill a Cart, when you have broke this part out you muſt remove it two or three Foot farther, and ſo on till you begin again, which lumps they fling into the Cart at once; this is a good way for the levelling of Land, one Man this way being able to do as much as two can with the Spades or Mattocks, but if you have room and are not hindred by Roots or Stones, *&c.* and have a mind to level a piece of Ground, break up your Land with the Plough firſt, and by that means you will ſave the labour both of the Spade and Pick-ax, and be obliged only to the uſe of the Shovel.

Beſides the forementioned, there are ſeveral other Inſtruments, as ſeveral kind of Hows, Mattocks, Pick-axes, Grubbing-axes, Iron-croes, Shovels, Dung-forks, Paddles, which are common every where: but if there are any other ſorts of Inſtruments any where that are not common, and that are not mentioned, I would deſire them that are willing to promote this Work, to ſend an account of them to the Publiſher.

Chap. IV. *Of ſeveral other Inſtruments neceſſary for the Farmer to have.*

IT behoves the Huſbandman that intends to thrive, to furniſh himſelf with all things neceſſary for his Buſineſs, that he may not put himſelf to the trouble of borrowing, nor the damage he may be likely to ſuſtain for want of them, nor the ſcorn or diſgrace of being deny'd any thing he wants, leſt according to the old Saying it proves, that he that goes a borrowing goes a ſorrowing.

And that you may not be forgetful of any, or at leaſt of the moſt uſeful and neceſſary Inſtruments, beſides the forementioned, I will give you a Liſt of Mr. *Worlidge*'s, of ſuch as are of common Uſe, and adviſe you to add ſuch as you find deficient, and likewiſe to keep them in their proper places, which many times ſaves a great deal of trouble.

Things belonging to the Arable and Field Lands are.

Harrows,
Drags,
Sickles,
Reaping-hooks,
Weeding-hooks,
Pitch-forks,
Rakes,
Plough Staff and Beetle,
Sledges,
Roller,
Mole Spears and Traps,
Cradle Scythes,
Seed-Lip.

To the Meadows and Paſtures.

Scythes,
Rakes,
Pitch-forks and Prongs,
Fetters, and Clogs, and Shackles.
Cutting Spade for Hay-Ricks.
Horſe-locks.

To the Barn and Stable.

Flails,
Ladders,
Winnowing-fan,
Meaſures for Corn,
Sieves and Rudders.

Brooms,
Sacks,
Skeps or Scuttles,
Bins,
Skrein for Corn,
Pails,
Curry-combs,
Mane-combs,
Whips,
Goads,
Harneſs for Horſes and Yokes for Oxen,
Pannels,
Wanteys,
Pack-ſaddles,
Surcingles,
Cart-lines.

Other neceſſary Inſtruments.

Hand-barrows,
Wheel-barrows,
Dibbles,
Hammer and Nails,
Pincerrs,
Sciſſors,
Bridles and Saddles,
Nail-piercers or Gimlets,
Hedging-hooks and Bills,
Garden-ſhears,
A Grind-ſtone,
Whet-ſtones,
Hatchets and Axes,
Saws,
Beetle and Wedges,
Leavers,
Sheep-ſhears,
Trowels for Houſe and Garden,
Hod and Tray,
Hog-yokes and Rings,
Marks for Beaſts and Utenſils,
Scales and Weights,
An Awl, and every other thing neceſſary.

BOOK X.

Chap. I. *Of Buildings, Repairs,* &c.

THE Farmer being often neceſſitated to build as well as to repair his Houſes, Barns, Stables, *&c.* and that not only upon the Account of decays; but of damages done by Storms and other Accidents, I thought it might be of uſe to give him ſome ſhort general Rules about Building and Repairs, and likewiſe of the Coſt and Charges of Buildings, and of ſuch Materials as are uſeful upon ſuch Occaſions, that he may the better compute his Coſt and Charges himſelf, and not wholly truſt to workmen to do it, (who often are very deceitful in ſuch Calculations,) and know how to Let his Work to them, which is much the beſt way, where the Owner underſtands it; provided he minds one Caution, which is not to change or vary from his firſt Contract, which Workmen are very apt to perſwade Men to do, if they have undertaken the Work at a low rate, or with deſign to ingage them in Building.

Not that I ſhall here pretend to give a full account of all the particulars relating to Building, and the ſeveral prices thereof, which would require a Volume of it ſelf; but what I propoſe, is only ſo much as may give an inſight unto thoſe that underſtand any thing of common Arithmetick, to compute the ordinary prices of Buildings and Repairs by, and to inſtruct them in the moſt material Rules of Architecture, ſo far as it may fit them for their common Occaſions, without committing thoſe very groſs Faults that many Builders run into.

I ſhall adviſe thoſe that are deſirous to build either out of neceſſity or choice, firſt to ſit down and conſider of the whole Deſign they intend to undertake, both as to the manner and method of it, as well as the charge and expence; Premeditation being a very neceſſary Preliminary to Building.

In order to which, I would perſwade all Builders to take the Advice of ſuch Surveyors or Workmen, as underſtand what they go about before they begin their Work, and that can make a good Draught, and lay the Deſign well out, that they adviſe to; that ſo when 'tis erected, it may in all things anſwer the End propoſed, according to ſuch Qualifications as may make it a compleat Structure, in order to which, it ought to be contriv'd ſo as to have Accommodation, Proportion, Uniformity and Strength, and to be durable and laſting, all which particulars, they that raiſe a new Houſe are very much to blame in, if they do not take care of; for Method and Confuſion are both of a price in this caſe, except only in that the may be deareſt.

Now in Building, we ought to conſider five Particulars, its Situation, Contrivance, Gracefulneſs, Uſefulneſs and Beauty.

Situation. The Rules for Situation are, that it ſtand in a healthy Air, and not near Marſhes, Fenns or boggy Grounds, nor Rivers, except it ſtand on riſing Ground on the North or Weſt ſide of them; neither let it be deſtitute of Breezes to fan and purge the Air, nor want the influence of the Sun-beams, according to *Rapin*'s advice;

If on thy native Soil thou doſt prepare
T'erect a Villa, thou muſt place it there
Where a free Proſpect does it ſelf extend
Into a Garden, where the Sun may lend
His influence from the Eaſt; his radiant heat
Should on your Houſe thro' various Windows beat:
But on that ſide which chiefly open lies
To the North-wind, whence Storms and Show'rs ariſe,
There plant a Wood, for without that defence,
Nothing reſiſts the Northern violence.

And *Cato* ſaith, that a Country Houſe ſhould have a good Air, and not be open to Tempeſts, and be ſeated in a good Soil, *&c.* But I ſhall adviſe the planting of ſhelter on the Weſt and South Weſt, as well as the North; and that you take care alſo, that it be well water'd and wooded, that it have a good aſcent to it, which makes a Houſe wholeſome, and gives opportunity for good Cellaridge, and likewiſe a good Proſpect is very pleaſant according to the variety it affords.

Contrivance. As for the Contrivance, which is a thing of great moment in Building, I would perſwade every one that begins this Work, to be well adviſed in what he doth, becauſe there will be no alteration of things afterwards without a great deal of charge; and good

Contrivance doth not only make things handſome and convenient, but often ſaves a great deal of charges too; and therefore get a Work-man that is able to make a good Draught of your Building, as I ſaid before, if your Building is ſuch, as requires no great curioſity; but if it doth, a Model will be the moſt certain way of preventing miſtakes in Buildings that require any great Nicety or Exactneſs; and as for a Draught, there ought to be in it the Ichnography of each Floor, and alſo the Orthography of each Face of the Building, as of the Front, Rear and Flanks; and if the Workman be ſkilled in Perſpective, more than one Face may be repreſented in one Diagram Scenographically.

But in the Contrivance of all theſe things, the Quality of the Perſon is to be conſider'd for whom the Building is erected, and accordingly let every thing be deſign'd, and proportionable lengths, breadths and heighth allowed to each place, with proper and convenient Rooms for what occaſions and uſes the Owner ſhall need; only what Draught you make, let it be as large as you can, that ſo the Ichnography of all Chimneys, Hearths, Jambs, Bed-places, Stairs, and the Latitude of all Doors and Windows in each Floor may be repreſented; and if you agree by the great for the Workmanſhip, it will be neceſſary to inſert the length and thickneſs of the Ground-plates, Breaſt-ſummers, Girders, Trimmers, Joyſts, Raiſings, and Wall-plates; and alſo the thickneſs of the Walls, Partitions, *&c.*

In the Orthographical Schemes there ſhould be a true delineation, and the juſt dimenſions of each Face, and of what things belong to it, as Doors, Windows, Balconies, Turrets, Chimney Shafts, *Faciâs*, Architraves, Cornices, and other Ornaments; and if it be a Timber Building, the ſeveral ſizes of the Ground-plates, Interduces, Breaſt-ſummers, Beams, principal Port-braces, Quarters, Window-poſts, Door-poſts, Cellar-beams, principal Rafters, *&c.* This care will prevent miſtakes and diſputes that may ariſe, eſpecially where you agree by the great.

Having given theſe Caveats, I ſhall next proceed to conſider the diſpoſal of the ſeveral Rooms and Offices, according to the nature of the Building you deſign to erect.

Sorts of Houſes.

In Building of Houſes long, the uſe of ſome Rooms will be loſt, in that the more room muſt be allowed for Entries and Paſſages, and it requires the more Doors ; and if a Building conſiſt of a Geometrical Square, if the Houſe be large, the middle Rooms will want Light, and therefore many commend the form of the Roman Capital H, which form, they ſay, makes it ſtand the firmer againſt the Winds, and lets in both the Light and the Air, and diſpoſes every Room near to one another, except you will have a Court in the middle, which was the method of Building of great Houſes formerly ; but for ſmall Houſes I think the Square the beſt form.

I muſt here commend the way of Building of Brick Houſes with ſtrong and firm Quoins or Columns at each corner, and where any of the principal Beams lie that ſhall come out half their thickneſs beyond the reſt of the Brick-work, by which means the reſt of the Walls between may be much thinner, and a great many Bricks ſaved ; and beſides, it adds a handſome Gracefulneſs to the building : Brick-walls likewiſe built after the ſame manner in Pannels, are very handſome, and ſave a great many Materials.

But according to Sir *H. Wotton*'s definition of Contrivance, it conſiſts of theſe two Heads or Principles, *Gracefulneſs* and *Uſefulneſs*.

Graceful-neſs.

The Gracefulneſs or Decency of a Building, he ſays, conſiſts in two things. *Firſt*, An Analogy or Correſpondency between the Parts and the Whole, whereby a great Fabrick ſhould have great Apartments, great Lights, great Doors, great Stair-caſes, and great Pillars or Pilaſters, all which ought to be proportioned to the bulk of the whole Building. And

Secondly, an Analogy and Agreement between the Parts themſelves, as to the Length, Breadth and Heighth of the Rooms, Windows and Doors, for all which no certain Rule can be given. Though ſome propoſe, that a Room ought to be in breadth two thirds of the length, and that it ſhould be as high as broad, and the heighth of a ſquare Room to be two thirds of it's ſquare; but as to theſe things, you muſt be govern'd by the bulk, and the deſign of the whole Building, as I ſaid before.

Beſides which, the heights of Rooms are various amongſt us, according to the Perſons they are built for; our ordinary Building being but about ſeven and a half or eight Foot high, the ſecond ſort of Houſes in the Country are about nine Foot, and the third ſort, which is fitteſt for Gentlemens Houſes, is from ten to fourteen Foot.

As for Sir *Henry*'s ſecond Point of Uſefulneſs, the Perſon, and the occaſion he hath for his Rooms are to be conſider'd: but to determine what number of Rooms muſt be allowed to a Nobleman's Seat, will require too many conſiderations to be inſerted here; yet for an ordinary Gentleman's Family, a Hall, a great Parlour, with a Withdrawing Room by it, and a ſmaller Parlour for common Uſe, with a Kitchen, Butteries and other Conveniences, is ſufficient; and underneath where there is a deſcent that Drains may be made, I am for having of good Cellars and the Dairy; but for the Kitchen in the Country, where there is room enough, I think it better to join it to the Houſe, than either to have it in or underneath it, becauſe of the ſmells (eſpecially in hot weather) that it ſends into the Houſe: and as for the Farm-houſes, I think one large Room with a large Chimney in it, to do the chief of their Work in, with a good Parlour, a good Dairy, with good conveniences of Butteries, Cellors, and Out-houſes, enough for a Farmer; which ſeveral Rooms ſhould be bigger or ſmaller, according to the bigneſs of the Farm that belongs to it.

To which Obſervations, I ſhall add ſome general Maxims for Contrivance in Building, as follows,

1. Let not common Rooms be private, as Halls, Galleries, Stair-caſes, *&c.* and let not private Rooms lie open and common, as private Parlours, Chambers, Cloſets, *&c.*

2. Light alſo is a principal Beauty in Building, and the Rooms that reſpect each particular Coaſt, ought as near as you can to be accommodated to it, as thoſe Rooms next the South for Winter Rooms, and thoſe that regard the Eaſt for Summer Rooms, the North Windows are beſt for Cellars, Butteries, *&c.* Rooms that have thorough Lights for Entertainment, and thoſe that have Windows on one ſide for Dormitories.

3. As for the ſize of your Houſe, you had better build it too little, than too big, for a large Houſe brings Company and Entertainment, occaſions the keeping of a great many Servants, and often requires a larger Purſe than is laid up for it.

4. As to the ſtrength of a Building; Country Houſes ought to be ſubſtantial, and able to encounter all the ſhocks of the Wind, and not to be above three Stories high, including the Garrets; and obſerve in working up the Walls, that no ſide of the Houſe, nor any part of the Walls be wrought up three Foot above the other, before the next adjoining Wall be wrought up to it, that ſo they may be all join'd together and make a good Bond, or elſe what is done firſt will be dry, ſo that when they come to ſettle, one part being moiſt and the other dry, it will occaſion it's ſettling more in one place than another, which cauſes cracks and ſettlings in the Wall, and much weakens the Buildings. The Materials alſo ought to be ſubſtantial, and be ſure if you build a Brick-building to take care of a good Foundation, and not be ſcanty in allowing Mortar, taking care that all your Brick-work be cover'd with the Tiling, according to the new way of Building, without Gable-

ends, which are very heavy, and very apt to let the Water into the Brick-work; the want of obſerving of which three Things is the common decay of Brick Buildings.

5. Upon a good Foundation two Bricks or eighteen Inches thick for the heading Courſe is ſufficient for the Ground-work of any common Structure, and ſix or ſeven Courſes above the Earth to the Water-table, where the thickneſs of the Walls are abated, or taken in on either ſide the thickneſs of a Brick, which is two Inches and a Quarter.

6. But for large high Houſes of three, four or five Stories high, the Walls of ſuch Edifices ought to be from the Foundation to the firſt Water-table, three heading Courſe of Brick, or twenty eight Inches thick at the leaſt, and at every Story a Water-table, or taking in on the inſide for the Summers, Girders or Joyſts to reſt upon, laid into the Middle or one fourth part of the Wall at leaſt, for the better Bond; but as for the Innermoſt or Partition-walls, a Brick and a half will be enough, and for the upper Stories nine Inches (or a Brick in length) Wall will be ſufficient.

Beauty. The *Beauty* of a Building conſiſts much in a regular Form and a graceful Entrance, for Regularity and Proportion pleaſeth the Eye; and I think a fair well wrought Front of Brick, pleaſanter than one of Stone, which ſoon loſeth its Colour and turns black. The being let through a double Grove of Trees to a Houſe, and to have fine Walks and Gardens behind, and on as many ſides of it as you can, is very ornamental.

And let your Offices, Barns, Stables, &c. neither join to, nor be too near your Houſe, eſpecially your Stable, which ought always to be a Building by it ſelf, becauſe of the Danger of Fire, upon the Account of the looking after Horſes, and the Uſe of Candles in it.

To which Maxims, I ſhall add ſome general Rules to be obſerved in Building, as order'd by Act of Parliament for the Building of *London.*

General Rules. 1. In every Foundation within the Ground, add one Brick in thickneſs to the thickneſs of the Wall, next above the Foundation, to be ſet off in three Courſes equally on both ſides.

2. That no Timber be laid within twelve Inches of the foreſide of the Chimney-Jambs, and that all Joyſts on the back of any Chimney be laid with a Trimmer ſix Inches diſtant from the back.

3. That no Timber be laid within the Funnel of any Chimney, upon penalty to the Workmen for every Default ten Shillings, and ten Shillings a Week for every Week it continues unreformed.

4. That no Joyſt or Rafters be laid at greater Diſtances from one another, than twelve Inches, And no Quarters at greater Diſtance than fourteen Inches.

5. That no Joyſt bear at larger lengths than ten Foot, and no ſingle Rafters at more in length than nine Foot.

6. That all Roofs, Window-frames, and Cellar-floors be of Oak.

7. That the Tile-pins be of Oak.

8. That no Summers or Girders do lie leſs than ten Inches into the Wall, nor Joyſt than eight Inches, to be laid in Loam, becauſe Mortar is apt to rot all Timber, and therefore ſome Workmen pitch the End of ſuch Timbers as they lay in Walls.

9. That no Summers or Girders do lie over the Head of Doors or Windows.

10. That good Oak Timber be laid over Doors and Windows, and that good Arches be turned over them.

Of Foundations. Where a Houſe is ſet upon moiſt Ground, dig the Earth two Foot deep, and after beating of it well, lay a Bed of Mortar, or Cement from either ſide to the Channel, and then lay a Bed of Cinders upon the Mortar, beat it well, and cover it with another Cement of Lime, Sand and Aſhes, this will drink up the Moiſture and make it dry. But if the Earth you build on be very ſoft, as in Mooriſh-ground, then you muſt get good pieces of Oak, whoſe length muſt be the breadth of the Trench, or about two Foot longer than the breadth of the Wall, theſe muſt be laid croſs the Foundation about two Foot aſunder, and being well rammed down, lay long Planks upon them, which Planks need not lie ſo broad as the pieces are long, but only about four Inches of a ſide wider than the Baſis or Foot of the Wall, and to be well pinned or ſpiked down to the pieces of Oak, on which they lie; but if the Ground is ſo very bad that this will not do, you muſt provide good Piles of Oak, of ſuch a length as will reach the good Ground, and whoſe Diameter muſt be about one twelfth Part of their Length, which muſt be well drove down with an Engine, and then lay long Planks upon them, ſpiking or pinning of them down faſt.

But if the Earth is only faulty in ſome places and good in others, you may turn Arches over thoſe looſe places, which will diſcharge them of the weight. Note alſo, that you muſt place your Pile not only under your Out-walls, but under your Partition-walls too, that divide the Building, for if they ſink, it will crack and damage the Outer-walls too.

And that you may know the proper Sizes of Timber for your ordinary Buildings; I ſhall, to what hath been ſaid already, add a Scheme of the Proportion of Timber, as agreed to by Act of Parliament for rebuilding of the City, that your Timber may in ſtrength be anſwerable to the reſt of your Building.

A SCHEME of the Proportions of Timber for ordinary Buildings.

Summers or Girders from	F.		F.	In *leng.* muſt be in their *Square*	In.		In.
	14		16		11		8
	18		20		13		9
	20	to	23		14	&	10
	23		26		16		12
	26		28		17		14

Joyſts of	F.	In *leng.* muſt be in their *Square*	In.		In.
	11½		8		3
			7	&	3
	10½		6		3

Binding Joyſts, & *Trimming* from	F.		F.	In *leng.* muſt be in their *Square*			
	7	to	11½		6		5
					7	&	5
					8		5

Wall-plates and *Beams* of any *lengt.* from 15 *Foot* may have in their *Square*	In.		In.
	7		5
	10	&	6
	8		6

Purlynes from	F.		F.	In *length* muſt have in their *Square*			
	15	to	18½		9	and	8
	18½		21½		12		9

Principal Rafters cut taper from	F.		F.	In *length* muſt have in their *Square on one ſide*	In.		In.	On the *other ſide*	
	12½		14½		8		5		6
	14½		18½		9		7		7
	18½	to	21½		10	to	8		8
	21½		24½		12		9		8
	24½		26½		9		9		9

Single Rafters in *length* from 6½ to 9½	6½	Muſt have in their *Square*	6—3½
	o		and
	9½		5—4

Principal Diſchargers of any *leng.* from	F. 10 upwards	Muſt have in their *Square*	In.	In
			13	12
			16	13

Having given you general Directions and Cautions about Buildings: I ſhall in the next place, give you ſome general Rules about the valuing of Buildings, and the Materials belonging to them, that you may know how to make ſome eſtimate of things of this Nature, without being wholly impoſed upon by Workmen, who are in theſe Caſes very apt to abuſe whoſoever they have to do with, as I ſaid before.

Carpenters Work.

Carpenter's Work is meaſured by the Square, that is ten Foot each way, or one hundred ſquare Feet; at *London* they will build a Houſe four Story high for forty Pounds a Square, if built with Oak-Timber, and thirty Pound a Square for Fir; that is, to find all the Materials, and all the Carpenters, Bricklayers, Plaiſterers and Glaſiers Work; and conſidering the Price of Timber, and Workmanſhip in the Country, and that the Houſes are but three Stories high, and that they have all their Materials laid in, that is, carted for them; I cannot think, but a good Houſe may be built for twenty five Pound a Square in moſt places, and in ſome, cheaper.

The Carpenter's Work to frame a Houſe in the Country, where you find Timber, is ſeven or eight Shillings a Square, if the Carpenter pays the Sawing; if not, 'tis four Shillings and Six-pence a Square.

The Carpenter's Work to build a Barn in the Country that hath one ſingle Stud, or one heighth of Studs to the Roof, is two Shillings a Foot, but if it have a double Stud and a Girt, 'tis worth two Shillings and Six-pence; that is, to meaſure one ſide and one end; as ſuppoſe, a Barn ſixty Foot long, and twenty Foot broad, that is, eighty Foot; this, the Carpenter's Work to hew the Timber, ſaw it out, frame it and ſet it together, will come to at two Shillings and Six-pence a Foot, ten Pound, you finding of the Timber.

Bricklayers Work.

Bricklayers Work at *London*, where a Bricklayer hath two Shillings and Six-pence a Day, a Labourer twenty Pence, and that Bricks are fourteen Shillings a Thouſand, Lime Four-pence half-penny a Buſhel, and Tiles two Shillings and Six-pence a hundred; for the Bricklayer to find Bricks, Mortar, Scaffolding, *&c.* for a Houſe, is five Pound a Pole-ſquare, that is, ſixteen Foot and a half; but for Walling, four Pound ten Shillings a Pole, if the Bricklayer finds all Materials, is enough; but for his Work only, 'tis one Pound two Shillings a Pole, that is two hundred ſeventy two ſquare Feet, and a Brick and a half thick; in the Country they will build a Wall for eighteen Shillings a Pole, ſuppoſing the Wall to be a Brick and a half thick.

The Bricklayers Work is meaſured by the Pole-ſquare, that is deducting out all Windows and Doors in the Wall; but if you are to meaſure a Wall, as ſuppoſe, of one hundred and twenty Foot long, and thirteen Foot three Inches high, you muſt multiply the one by the other, and it will make 1590 Foot, which divide by 272½ makes five Poles, or Rods, three fourths and forty two Feet; but if 'tis more or leſs than a Brick and a half thick, you muſt reduce it to a Brick and a half by multiplying the length, and the heighth by the Number of half Bricks that the Wall is in thickneſs; dividing the Product by three, and the Quotient by 272½. Chimneys are commonly done by the Hearth. And note, that one Brick and a half thick is fourteen Inches, two Bricks is one Foot and a half, and that four thouſand five hundred of Bricks will do a Pole-ſquare of Walling one Brick and a half thick, and twenty five Buſhels of Lime where the Sand is good, that is, where 'tis of a large rough Grain, and not mixed with Soil.

Tiling. *Tiling* is meaſured by the ten Foot-ſquare, the Workmanſhip of which is three Shillings and Six-pence a Square in the Country, to find all but Tiles, is twelve Shillings, and to find Tiles and other Materials is one Pound ſix Shillings a Square.

Three Buſhels of Lime will do a Square of Tiling, but I prefer Loam and Horſe-dung mixed together, and laid about the Middle of the Tile, ſo as not to touch the Pins or Laths, nor to be ſo near the point as to waſh out, becauſe Lime is too corroding, being apt to make the Tiles ſcale, and to grow with Moſs.

Underpinning for the Bricklayer to dig the Foundation where 'tis a Brick thick, and a Foot deep, is a Penny a Foot, and where 'tis two Foot and a half running Meaſure, 'tis Two-pence a Foot, and ſo proportionable.

Bricks. *Bricks* may be made of any Earth that is clear of Stones, even Sea-owſe, but all Earth will not burn red. To burn a Clamp of Brick of ſixteen Thouſand, they commonly allow ſeven Ton of Coals, twenty hundred to a Ton, or nine hundred of Faggots of about three Foot long, and to ſome Earth, ten Buſhels of Coals to a thouſand of Bricks. Bricks ought to be nine Inches long, four Inches and a half broad, and two inches and a half thick; a Yard ſquare of Clay will make ſeven or eight hundred of Bricks, and the Workmen have commonly ſix Shillings a thouſand to make them.

Plaſterers. The *Plaſterer*'s Work is commonly done by the Yard ſquare, for Lathing, Laying and Setting is Eight-pence a Yard, rendring on a Brick-wall is Three-pence a Yard, ſtopping and whiting one Penny half-penny a Yard, whiting a Penny a Yard; but Lathing, Laying and Setting with oak-Laths is ten or twelve Pence a Yard.

To daub a Partition-wall with Clay on both ſides is Three-pence a Yard, and to rough caſt it without, and render it on the inſide Four-pence a Yard in the Country.

Heart-Laths of Oak are one Shilling and Tenpence a Bundle or Hundred.

Sap-Laths of Oak are one Shilling and Eightpence a Bundle.

Fir-Laths are Twelve-pence a Bundle.

A Bundle of Laths they reckon will do a Square of Tiling, and five hundred of Nails.

Sawing of Timber is from two Shillings and Eight-pence, to three Shillings a Hundred, which they meaſure in the Middle of the Tree, and ſuppoſe a Board to be ten Foot long, and one broad, once cut is reckoned ſo many Foot.

Thatching. *Thatching* with Straw is done from two Shillings and Six-pence, to three Shillings a Square; and with Reed for four Shillings a Square: Two good Load of Straw will do about five Square, the Square being a hundred ſquare Feet; and a Thouſand of Reed will cover three Square of Roofing, which coſts about fifteen or ſixteen Shillings, both which Thatching moſt tie on with Withs, but old pitched Ropes unwound, are much cheaper, and more laſting to tie them with.

Digging. *Cellars*, Foundations of Buildings, *&c.* are commonly done by the Yard ſolid, which contains twenty ſeven ſquare Feet, which is uſually counted a Load; and therefore the Dimenſions being given in Feet: Multiply the length by the breadth, and the Product by the depth, dividing the laſt Product by twenty ſeven, the Quotient will give the content in ſolid Yards.

Glaſier's Work is done by the Foot-ſquare, *Engliſh* Glaſs is Six-pence a Foot, *French* Glaſs one Shilling, and Crown Glaſs one Shilling Six-pence a Foot; to take down a Quarry of Glaſs to ſcowre, ſoder, band, and to ſet it up again, is three half-pence a Foot.

Chap. II. *Of Mills.*

IN Ancient Times they bruiſed their Corn in Mortars, ſince which tedious way, Mills have been invented, ſome to be turn'd by Hand as Querns, others to be moved by Horſes, others by Wind, and others by Water; which laſt being maintained with leaſt Coſt, and being moſt certain and moſt advantageous, hath gained the Preheminence, and is made uſe of in moſt places where Water is fit for that purpoſe, and where there is employment. Which altho' 'tis a little for the eaſe and conveniency of near Inhabitants, and for the particular Advantage of the Owner; yet 'tis a very great Detriment and Damage to the Kingdom in general, by the injurious obſtructing of the Water, to the ſpoiling of a great deal of Meadow-ground, and by the preventing of the Advantage that might be made by over-flowing of Land, which upon the removal of the Mills might be done, and the Corn as well ground, either by Wind-mills, which grind twice the Quantity in an Hour, and may be erected on Hills, or in the Plains on any open Places, even where the Water-mills ſtood. Or by the Rectification of Water-mills, that a leſs Quantity of Water might ſerve them; to which end, many have made very ingenious Attempts; and without queſtion, much might be done in it, both in the framing and ordering the Water-works, and in the Contrivance of the Mill it ſelf, which doubtleſs goes much heavier by the Stone, they call the Runner, its being ſo large, and being incompaſſed with a Hoop or Caſe that keeps the Meal to the edge or circumference of the Stone, and much deadens its motion: for the larger the Runner is, the heavier it moves, which may in ſome meaſure be remedied, by making four or five Vents or Paſſages in ſeveral Places of the Hoop, to take off the Meal as faſt as it is ground, that none may lie to clog the Runner.

Or a Mill may probably be ſo contriv'd, that the Grinding-ſtone or Runner may be vertical, and of but a ſmall Circumference, the flat and ſquare Edge whereof may be fitted into another fixed Stone, cut hollow about the Half or Third-part of a Circle, which Runner by its firſt Motion may diſpatch as much Corn in the ſame time, as a larger the other way. Several alſo of theſe vertical Stones may be placed on the ſame Axis, and may be uſed in all ſorts of Mills.

But conſidering the Ill-name of the Millers (which I wiſh they did not ſo much deſerve) and the Reaſons before given, I believe Hand-mills would be of much more advantage, both to publick and private Families, one of which ſort for the grinding of Malt, I have given you already; and I could wiſh that others of the ſame kind for other ſorts of Corn might be found out, or thoſe ſorts which are already found out more improved, and be made more laſting than they are.

Chap. III. *Of ſeveral Sorts of Works belonging to Husbandry, computed according to the Workmen's Wages of Fourteen-pence a Day in Summer, and Twelve-pence a Day in Winter.*

Plowing and Harrowing.

OF *Plowing and Harrowing.* A Man cannot well plow in ſtiff Grounds above an Acre in a Day, of Lays or Land the firſt time 'tis fallowed, but where Land is broke up already, if the Land is not miry, he may plow an Acre and an half, and in ſandy light Lands two Acres. In ſtiff Clays they may plow and ſow one Acre of Wheat, and an Acre and a half of Barly or Oats, and in light Lands double as much with one Team of Horſes; but an Ox Team cannot do above Two-thirds of that Quantity.

The Price for plowing of Land is five Shillings an Acre, and one Shilling an Acre for harrowing; but if 'tis Land not plowed before, 'tis worth ſeven Shillings an Acre. The charges of keeping an ordinary Team of Horſes, where Oats ſell for ten Shillings a Quarter, and Hay at twenty Shillings a Load, the Countrymen reckon about fifty Pounds a Year.

Of Reaping and Mowing of Corn. A Man with a Binder may reap an Acre of Wheat, and ſomething more of Rye in a day, if it ſtands well; and of Peaſe, Vetches, *&c.* two Acres: For making up of Sheaffs of Oats or Barly, one Man will bind as much as another can mow, and that from two to four Acres in a day, if thin.

Reaping and Mowing.

The Price of Reaping and Binding of Wheat by the Acre, is five Shillings; of Rye four Shillings; to mow Oats, is one Shilling an Acre, and to make them fit to Inn is one Shilling an Acre more; to do the ſame for Barly is worth one Shilling and Three-pence an Acre.

Of Thraſhing of Corn. A Man may thraſh four Buſhels of Wheat or Rye, ſix Buſhels of Barly or Oats, and five Buſhels of Beans and Peaſe in a day, if the Corn thraſh well.

Thraſhing.

The Price of Thraſhing of Corn, is, for Wheat, from Three-pence to Four-pence a Buſhel; for Rye from Two-pence to Three-pence; for Oats from Fourteen-pence to Sixteen-pence a Quarter; and for Barly the ſame.

Price.

Of Digging of Land. A Man may dig four or five ſquare Pole in a Day of Garden-ground, a Spit deep, that hath been dug already; and he may dig three Pole or more to fill into Wheel-barrows, and ſomething better than two Poles into Carts, if 'tis good digging Ground.

The common Price for digging of Garden-ground is Four-pence a Pole, becauſe they expect better Wages for Garden, than other Work, elſe Three-pence a Pole is good Wages. To dig Ground a Spit deep, and to fill it into Wheel-barrows is worth Four-pence a Pole and into Carts Six-pence a Pole.

Of Hedging and Ditching. A Man may Ditch and Quick-ſet a Pole or more in a day, where the Ditch is three Foot wide, and two Foot deep.

A Man may make a Hedge five Foot high, and bind it well, and lay it thick, and do two Pole in a day; if lower, he may do double.

The Price of Hedging and Ditching, to make a Hedge and lay the Quick is Three-pence a Pole.

To make a Hedge and cleanſe a Ditch, the common way is Five-pence a Pole; but if he plaſh it well, and cleanſe the Ditch two Spit deep, and ſets it with Quick where any is wanting, 'tis worth from Six-pence to Eight-pence a Pole.

To lay a Hedge and bind it well, and to make a new Ditch of three Foot wide, and two Foot deep is Twelve-pence a Pole.

To make a new Ditch three Spit or two Foot deep, and three Foot broad, is Twelve-pence a Pole, and in very ſtony Ground, Fourteen-pence a Pole, and the Workmen find Quick and plant it and make a new Hedge with Buſhes.

Of making of Banks. They are meaſured by the Float or Floor, which is eighteen Foot ſquare, and one deep, which contains twelve Cart-load in good Mould. A Man will fill into Wheel-barrows a Floor and a half in a Day, which will require three Men to carry away in Barrows, and one to trim and ram the Earth.

Note, that of what depth and breadth you make your Ditch, the Bank will be near of the ſame heighth and breadth.

In the Marſhes they dig a Ditch ten Foot wide at the top, and ſix in the bottom, and four Foot deep, at two Shillings a Pole, reckoning twenty one Foot to the Pole.

To meaſure a Ditch, take the length, and for the breadth ſee how wide 'tis at the bottom and at the top, and half it; as ſuppoſe a Ditch ſix Foot wide at the top, and four at the bottom, which makes ten Foot, the half of which will be five Foot, which multiply by the length, and you have the Contents of the Ditch.

To mow Graſs. A Man may mow in a day an Acre of Meadow; but if it ſtand well and be even, he may mow an Acre, or an Acre and a half; and if 'tis Up-land Meadows, and the Graſs thin, he may mow two Acres in a day.

To cut Graſs, and to make it Hay fit to carry in, is worth in Meadows five Shillings an Acre, and in Up-lands from three Shillings and Six-pence to four Shillings an Acre.

Chap. IV. *Of the Charges and Profit of Farming.*

THEY commonly allow a Farm to make three Rents, one for the Landlord, one for Charges, and one for the Tenant to live-on; but 'tis but few Farms that will conſtantly afford that Increaſe, or be maintained for that Charge; indeed, if you take a Farm of 100*l.* *per An.* if the Land is worth 20*s.* an Acre, 100*l.* may defray the Charges of it: but if the Land of a Farm of 100.*l.* a Year, is worth but 10*s.* an Acre, you muſt allow 120 or 130*l.* *per An.* for Charges and you muſt reckon 250 Acres of ſuch Land to 100*l.* a Year, or you will loſe by it, unleſs 'tis very improveable Land.

But there being great Variety of Lands, and particular Charges that attend ſome Lands more than others, which will require the Farmer's utmoſt Care, Diligence and good Huſbandry, and which would take up more room to particularize, than I have to do it in; I ſhall rather refer him to proportion things as near as he can, according to Mr. *Tuſſer*'s Directions, as he hath ſummed up the Charges of Farming, with which I ſhall conclude this Part of Huſbandry.

1. *One part caſt forth for Rent due out of hand,*
2. *One other part for Seed to ſow thy Land;*
3. *Another part leave Parſon far his Tythe,*
4. *Another part for Harveſt, Sickle and Scythe.*

5. One part for Plow-wright, Cart-wright, Knacker
and Smith.
6. One part to uphold thy Teams that draw therewith;
7. Another part for Servants, and Workmens Wages lay,
8. One part likewiſe for fill-Belly day by day:
9. One part thy Wife for needful things doth crave,
10. Thy Self and thy Children the laſt part would have.

BOOK XI.

Chap. I. *Of the Benefit of Raiſing, Planting and Propagating all Sorts of Timber, and other Trees uſeful either in Building, or other Mechanick Uſes.*

WHEN we conſider that Trade, Riches and Strength are inſeparable, and that their great Dependence is upon our Navy, we might have hoped ſo great a Concern to the Nation ſhould have occaſioned a greater Care in propagating and preſerving of Timber, which is of principal Uſe to ſupport it. And though we cannot expect to find many in this Age publick-ſpirited enough to have ſuch regard to the general Good, as to prefer it before their private Intereſt; yet the particular Profit that Timber brings to the Owners of it, as well as its Advantage to the Publick, might if it had not cauſed more Care in propagating of it, have at leaſt prevented thoſe that have had opportunities of experiencing its Advantage, from making that deſtruction and general ſpoil that hath every where of late been made of Woods; had they kept particular Accounts of the Profit, or been able to make a true Judgment of their own Advantage, which, I think, in moſt places to exceed that of the Plough, or moſt other Sorts of Huſbandry, where the Soil and other Circumſtances are proper for ſuch Improvements, without a due conſideration of which, no great Advantage can be expected from this, or any other Sort of Huſbandry; for tho' Art may improve Nature, yet the forcing of it commonly requires more Coſt and Labour than will turn to the Advantage of the Undertaker. And therefore, as 'tis from an Application of ſuch things as are agreeable to each other, that Profit muſt proceed, I ſhall endeavour according to ſuch method, to give the beſt Information I can, of ſuch things as may be moſt for the advantage and incouragement of the Planter and Farmer.

And therefore, as Trees are of ſeveral Sorts, and for ſeveral Uſes, as ſome for Building, Utenſils, and Fuel; and others for Fruit, Ornament and Pleaſure; and that ſome are raiſed of Seeds, as the Oak, Cheſnut, Aſh, *&c.* and ſome ſpring from the Roots, as Elm, Alder, and others; and ſome are raiſed of Sets, as Willow, Oziers, and the like: and conſidering that ſome Trees, even thoſe that are the moſt uſeful, have been lately cultivated amongſt us, and that there are more that will deſerve the care of our Propagation, I ſhall not tie my ſelf up only to the common Sort, but add ſomething for the Improvement of ſuch kind of Trees, as may be of Uſe, tho' not commonly known amongſt us, that ſo there may be an Improvement of the Species, as well as of the way of ordering of them, which work, though 'tis ſo well perform'd by that Learned and ingenious Gentleman Mr. *Evelyn*, that it may juſtly be thought needleſs for me to meddle with this Subject; Yet as the deſign I firſt propoſed, was a compleat Syſtem of Huſbandry, and that there are ſeveral things for the Improvement of this part of it, that I could not otherways have had an opportunity of mentioning and getting Intelligence about, that I think none have treated of yet, I was upon this account under a neceſſity of making a ſmall Treatiſe of this Subject, purſuant to ſomething of a different method, than hath hitherto been done; What I ſhall meddle with being but a ſmall part of what Mr. *Evelyn* hath done, and I ſhall take care in the following Deſign to avoid as much as I can, what may any ways be prejudicial to one that deſerves the chief Honour of ſo uſeful a Subject, he having been the only promoter of this advantageous part of Huſbandry.

For the Propagation of Trees, I ſhall not recommend the waiting for a ſpontaneous Product, except where the Ground is very full of Roots and young Wood, becauſe of the length of time that ſuch Production requires, and becauſe that neither planting nor ſowing are any hindrance to it; nor ſhall I determine in this place which is the beſt way of raiſing of Trees by Seed or by the Tranſplantation of ſuch, as we find to have raiſed themſelves from the Seed, or that ſpring from the Mother-roots of other Trees, becauſe I ſhall have an occaſion to mention it hereafter, and to give an account of ſeveral particular Experiments relating to each ſeveral way. I begin with the raiſing of Trees by Seed, as being what muſt of neceſſity be the firſt Work in moſt places, becauſe other Trees are not to be had to make Plantations with; in order to which, it will be neceſſary firſt to treat,

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Chap. II. *Of the Soil.*

WHich being the Foundation of this Work, and there being ſuch a vaſt difference between the growth of ſome Woods and others, upon the account of the Ground they grow upon; it may be neceſſary (tho' I ſhall have occaſion hereafter to treat of the particular Soil that each Plant requires) to premiſe ſome general Rules concerning it; for though Trees will many times thrive on courſe Land; yet the beſt Sort of Lands for moſt Trees is the deepeſt and richeſt Soil, which always produces the Talleſt Trees, all Trees commonly growing

ing ſhrubby, unfruitful or ſpreading of their tops; where the Soil is either dry or ſhallow: And tho' ſome Trees covet to run juſt under the Surface, yet I think 'tis generally occaſion'd from a want of depth of Earth; and where there is not a ſufficient depth to cool the Roots and keep them moiſt, they are neither laſting nor proſperous, though ſome Trees, as Beech, Hazel, Holly, *&c.* affect gravel and ſandy Land, and Aquaticks moiſt and boggy; yet for the moſt profitable and uſeful Timber, 'tis neceſſary to have a deep Soil, and in ſuch places Trees do no hurt to the Land by ſucking of the heart away from any thing that ſhall be ſown upon it. However, I am not for imploying of Land worth twenty or thirty Shillings an Acre for this uſe, farther than by planting of the Hedgerows, becauſe many ſorts of Lands not worth above five or ten Shillings *per* Acre, are near as good; nay, there are ſome ſorts of Lands that are not very good for either Corn or Graſs, that will bear very good Trees, as ſome of the hazelly Brick-earths in *Eſſex*, and ſome ſorts of heathy Lands. If thoſe that have opportunities of making any particular Obſervations about the Nature of ſuch Soils, and of the growth of the Trees upon them, will ſend them to the Publiſhers, I ſhall take care to add them in my ſecond Volume, and make ſuch uſe of them, as I believe will be of publick Advantage. Some Earths have a good Soil above, and underneath, Gravel, Sand, Stones, Slate, cold barren Clays, and cold Springs, *&c.* a Planter or Raiſer of Trees ought to conſider the under Soil, as well as the ſuperficies of the Earth, and to obſerve that the worſe your Land is, the worſe it will be for tranſplanting; and therefore the raiſing of Trees by Seed on barren Lands is much to be preferred, becauſe it allies them to it, and makes both the Plant and the Soil the more natural to each other; but ſeeing all ſorts of Land ſhew what they are inclined to by their natural Product, and what the profit will be by the growth of the Trees, and the Shoots they make, it will be beſt to ſute your Seeds, and your Soil one to another, and likewiſe to calculate your profit by the ſame Rule. Tho' even in this Caſe, too great Additions and Helps may be afforded to Nature with a little coſt and labour, as I ſhall have occaſion to ſhew hereafter.

Chap. III. *Of Seeds.*

CHuſe Such Seeds as are mature, ponderous and ſound, and that eaſily ſhake from the Boughs being taken from the tops of the youngeſt and moſt thriving Trees, and gathered when they are ready to fall, which doth for the moſt part direct the beſt time for the ſowing of them, (which for moſt ſorts of Seeds is about *November*) except your Land is very cold or moiſt, there a vernal ſowing may be better; Acorns, Maſt, and other Seeds, being what may be kept well for the Spring Seaſon, by being barrelled or potted up with moiſt Sand or Earth, and laid S. S. S. during the Winter, at the end of which, you will find them ſprouted, which being committed to the Earth by a careful hand, will be as apt to take, as if ſown earlier; and by this means better eſcape the Vermin, who are very greedy of ſpoiling the Winter Sown Seed, and they are not ſo eaſily damaged by the increaſing heat, as thoſe ſown in the beginning of Winter, eſpecially in looſe hot Grounds; and therefore, if you have occaſion to preſerve much Seed, chuſe a fit piece of Ground, and with Boards raiſe it three foot high, and lay the firſt lay with fine Earth about a Foot thick, and another lay of Seeds, Acorns, Maſt, Keys, Nuts, Haws, &c. promiſcuouſly or ſeparated with a little Mould ſprinkled amongſt them, and let the third, or upper lay be of Earth or Sand, or you may bury the Seeds in dry

Sand or pulveriz'd Earth, either barrelled or laid in heaps in ſome deep Cellar to preſerve them from the rigour of the Winter. If your Seeds be gathered in moiſt weather, lay them a drying, and ſo keep them till you ſow them, which may be as ſoon after *Chriſtmas* as you pleaſe; but if they ſpire out before you ſow them, be ſure to commit them to the Earth before the Sprouts grow dry.

As for the medicating or ſteeping of Seeds, or the enforcing or inriching of the Earth by Compoſt, *&c.* for Trees of this kind, 'tis a charge that would much diſcourage the Work, and what is needleſs, becauſe if one ſort of Mould be not proper for one kind of Tree, it may be for another; but if your Seeds or Kernels prove extraordinary dry, if you lay them twenty four hours in Milk or Water, only impregnated with a little Cow-dung, it may do well to forward their ſprouting, eſpecially if you have been hindred from the former Preparation.

What Seed is beſt.

The ſhape and weight of the Seeds inform you which are the beſt, and how they may be ſet, moſt of them, when they fall, lying on one ſide with their ſmall end to the Earth, from which part they put forth the Root firſt, which when it hath laid hold of the Ground, from the ſame place ſends forth the Shoot for the Tree; and if they be heavy Seeds, ſow them the deeper, as Acorns, Cheſnuts, Walnuts, Peaches, Apricocks, *&c.* about two or three Inches deep: But if light Seed, as Elm, Lime, *&c.* cover them only with a little Mould about half an Inch deep.

Of raiſing Trees of Seed.

Being thus provided with Seeds of all kinds, you may raiſe Woods or Groves immediately from them, which I think the beſt way, where you deſign a large Plantation, and reſolve to employ the Land for no other uſe, and to keep it well fenced. Firſt, becauſe they take ſooneſt; ſecondly, becauſe they make the ſtreighteſt and moſt uniform Shoot;

thirdly, becauſe they will neither require ſtaking nor watering (which are two very conſiderable Articles) and laſtly, for that all tranſplanting (tho' it much improve Fruit-trees) unleſs they are taken up the firſt Year or two, is a conſiderable impediment to the growth of Foreſt-trees, unleſs where they are removed from a very barren Soil to a rich, and meet with a very moiſt Summer, eſpecially in the tranſplanting of the Cheſnut, Walnut, and ſome others, that I ſhall have occaſion particularly to mention afterwards; but if you deſign a Tranſplantation of Trees, it is beſt to raiſe them in your Seminaries and Nurſeries firſt; by which means you may tranſplant them as you pleaſe, for Coppice-ground, Walks, Hedges, Rows, &c. therefore I ſhall refer what I have further to ſay about the raiſing, tranſplanting and managing of them, to the particular ordering of them in the Seminary and Nurſery.

Chap. IV. *Of the Seminary and Nurſery of Foreſt-trees.*

FOR a Seminary or Nurſery of Foreſt-trees, which is what I only deſign to treat of here, it is what will be thought by many not worth the taking of Pains about; but the ſmall coſt that attends it, and the ſmall Quantity of Land requiſite for ſuch a Uſe, with the advantage you will find by it in filling up your Hedge-rows, and other waſte uncultivated places, will quickly convince you of its uſefulneſs, and therefore having made choice of your Seeds, chuſe out ſome fit piece of Ground that is well fenced, reſpecting the South Eaſt, rather than the South, and well ſheltred from the North and Weſt. Let it be cleared of all trumpery, and if large, it may be plowed up firſt, becauſe it will make it dig the eaſier, and after that, I would have it dug up two ſpits deep, and all the upper part or ſurface of the Earth caſt undermoſt, and the under Spit laid above, where the Soil is deep enough to bear it; which tho' it may be a charge at firſt, it will abundantly anſwer in the growth of Trees afterwards, becauſe they will every where have looſe Earth to root in, and the beſt of the Soil under them, all Trees ſhooting of their Roots moſt downwards, which is the only way I would have Trees advanced in their growth in Nurſeries, and not by mending or improving of the Land by Dung, *&c.* as the Gardiners commonly do for their own profit, and not the buyers, becauſe of the difficulty that you will meet with in making ſuch Trees to grow, if you ſhould have occaſion to remove them to a worſe Soil: and if your Nurſery be dug up the Winter before you ſow or plant it, ſo as to give a Winter and Summer fallowing to make it mellow and fine, it will do well. At one end or ſide of which make ſome ſmall Beds of about a yard wide, leaving a ſmall path between them for the Seminary; croſs the Beds, make ſome ſmall Trenches at about a Foot diſtance, into which throw the Seeds, but not too thick, covering them with a Rake, according to the depth before directed; but if you deſign the raiſing of Oaks, Walnuts, Cheſnuts, *&c.* the beſt way is to ſet them as they do Beans, and at about a Foot diſtance, which is to be done about the latter end of *October* for the Autumnal ſowing, and in *February* for the Vernal; ſix Buſhels of Acorns will ſow or plant an Acre of Land at a Foot diſtance, which I think enough in the Seminary, becauſe they ſhould be weeded by hand, and the ſpaces between the Beds will give room enough to come at them.

When your Plants begin to peep, Earth them up, eſpecially after great Froſts, at which time, the ſwelling Earth is apt to ſpue them forth, and when they are about an Inch above Ground, you may in a moiſt Seaſon draw them up where you find them too thick, and ſet them in ſuch places as you have occaſion to beſtow them in.

Your Seedlings having ſtood till *June*, beſtow a weeding or a ſlight howing upon them, and ſcatter a little mungy Straw, Fern, rotten Beans, *&c.* amongſt them, to prevent the Roots from ſcorching, and to receive the moiſture that falls; and in *March* following, by which time it will be rotten, chop it to pieces, and mix it with the Earth, which continue to do for two or three Years ſucceſſively, for till then, the ſubſtance of the Kernel will hardly be ſpent in the Plant: after which you may tranſplant them as you pleaſe, only the younger they are removed after they are three Years old, the better they will grow. At the removing of them you muſt conſider whether the place you deſign them for be ſecure to keep Cattle from them while young; but if not, and you deſign to plant them where Cattle come, it will be beſt firſt to remove them into your Nurſery, where you may plant them in Rows three Foot diſtant, and the Trees in the Rows to be at leaſt two Feet diſtant from each other, becauſe elſe you will be apt to cut the Roots in taking of them up, in theſe Rows you may let them ſtand till they are big enough to plant out, ſo as by the help of ſome Stakes or Buſhes put about them, they may in a ſhort time be able to defend themſelves from Cattle, the not taking care of which particular has been a great diſcouragement to ſeveral Planters. Some at the firſt tranſplanting of their Trees out of their Seminaries cut them off about an Inch from the Ground, and plant them like Quick; but it's not a good way for any ſort of Trees that have a large Pith, or that you deſign for Timber-trees, becauſe it lets the Water into the one, and ſpoils the Butt-end of the other, which is the principal Part of the Tree, by diverting the Pith, and by conſequence, the Grain of the Wood too, and ſo hinders it from running clear if you ſhould have occaſion to cleave it into Lathes, Pales, *&c.* and therefore I am only for pruning up the ſide Boughs; but about the Tranſplantation of Trees and the pruning of them, *&c.* I ſhall have occaſion to take notice afterwards; only you muſt obſerve, that having tranſplanted your Seedlings into a Nurſery, they ought ſtill to be kept clean from Weeds, and alſo the Ground to be kept looſe, that the Roots may ſpread the better, and therefore in the next *Autumn*, before the Leaf is off, your Nurſery ought to be digged a ſmall Spit deep once a Year, only in Spring or Summer you muſt pull or howe up the Weeds as need requires; and I propoſe the digging amongſt the Trees, while the Leaf is on, becauſe if it be done while the Sap is up, if a Root ſhould happen to be cut it will ſhoot out again, perhaps two for one; but after the Sap is once down, if a Root be cut it will not ſhoot forth that Winter; however be not too early in the Seaſon, nor yet too careleſs of the Roots; and between the Rows you may plant Beans, Peaſe, or ſow them with Turneps to prevent Weeds from coming up, which if any do, they ſhould be howed up in *June*, and laid about the Roots of the Trees to rot and to keep them moiſt.

Trees of Layers.

Many Trees may alſo be propagated by Layers, the Ever-greens about *Bartholomew* Tide, and other Trees about *February*, which is done by ſlitting of the Branches a little way, and laying of them half a Foot under Mould, with which, if ſome of the Earth that is in hollow Trees be mixed, or ſome Pigeons Dung, or if you water the Layers (where the Plants are ſuch as what you are curious of) with the Grounds of Beer or Ale, it will make them ſtrike Root the better, and if they comply not well, peg them down with a Hook or two, and when you find them compleatly rooted, the next Winter cut them off from the main Plant, and plant them forth in your Seminary or Nurſery, as is before directed about Seedlings; others twiſt the Branch or bare the Rind, and if 'tis out of the reach of the Ground they faſten a Tub or Baſket near the Branch, which they fill with good Mould, and lay the Branch in it.

Trees of Cuttings: Some Trees are raiſed of Cuttings taken from the young Shoots, the beſt of which are thoſe Suckers that ſpring from the Roots (except 'tis a grafted Tree that you deſign to have Cuttings from) the Cuttings muſt be ſet a Foot deep in the Earth in a moiſt ſhady place, as near as you can, and ſtand near a foot out; but if they are of ſoft Wood, as Willow, Poplar, Alder, &c. 'tis beſt to take large Truncheons, ſo tall as that they may head above the reach of Cattle; but if you raiſe your Trees of ſuch ſorts as bear a Knuror burry ſwelling, ſet that part into the Ground, and make the hole wide, pointing the end of the Cutting ſo ſmooth that no part of the Bark may be ſtripp'd up in ſetting; and keeping the Ground moiſt about it, it will ſeldom fail of putting out Roots and growing.

Trees raiſed by Suckers. Many ſorts of Trees may be propagated from Suckers coming from the Roots of other Trees, to cauſe which, dig about their Roots early in the Spring, and finding ſuch as with a little cutting may be bent upwards, raiſe them above Ground three or four Inches, and in a ſhort time they will ſend forth Suckers fit for tranſplantation; or you may ſplit ſome of the Roots with Wedges, or break them, &c. and covering of them with freſh Mould they will quickly ſprout out, which is one of the beſt ways of raiſing Elms and ſome other ſorts of Trees; but theſe things I ſhall particularly mention hereafter.

Chap. V. *Of the Oak.*

I Shall begin with the *Oak*, as affording the moſt uſeful and beſt ſort of Timber, eſpecially for the building of Ships, and what was, of all others, the moſt eſteemed amongſt the *Romans*, of which there are ſeveral Species in ſeveral parts of the World; but Mr. *Evelyn* takes notice only of four ſorts, two of which he reckons the moſt common in *England*, *viz.* the *Quercus Urbana*, which he eſteemeth the talleſt, being clean, and of a ſmooth Bark; and the *Robur* or *Quercus Silveſtris*, which hath a kind of a black Grain, and bears a ſmaller Acorn, ſpreading forth its Roots and Branches more than the other, and keeping of its Leaves all Winter; theſe differences I know variety of Soil will produce, and that the more thriving an Oak is, the more ſappy it will be, and the longer the Leaves will hang on it; and therefore whether theſe marks are diſtinguiſhing of the Species I ſhall not determine, but rather adviſe the gathering of your Acorns from ſuch a Tree as you like the kind and ſort of beſt.

How raiſed. The Oak may be propagated by Layers, but not to that advantage of bulk and ſtature as from the Seed; nor can it be ſo well tranſplanted as it may be raiſed from the Acorn: But where you deſign tranſplanting of them for Walks, Groves, or into Hedge-rows, or other places where Cattle come, they ſhould be often tranſplanted; and the beſt way to make them bear, is to raiſe them firſt from Acorns in your Seminaries, and after three Years growth to tranſplant them into your Nurſery, ordering them as is ſhewed already, where you may let them ſtand ſeven or eight Years, or till they are about ſeven or eight foot high, according to their bigneſs and growth, and then remove them, as you have occaſion, without which care, moſt Trees are very difficult to remove that are raiſed of Seed; the reaſon of which is, becauſe 'tis the nature of all ſuch Trees to put forth one down-right Root firſt, and not the ſide Roots till the Tap-root is got near the bottom of the Soil, eſpecially in a looſe hollow Ground, and ſo the main Roots going deep the ſmall Roots, which are the chief nouriſhers of the Tree, lie ſo deep that you cannot come at them to take them up, but, if you take them up young, while the Tap-root is ſmall and not ſhot too far down, you may, by cutting off the Tap-root about a Foot long, cauſe it to branch near the Top of the Earth, which will give you the advantage of taking of it up with ſmall Roots when 'tis removed again.

But ſome, to prevent this Inconveniency, put under all the Trees they raiſe of Seed about three or four Inches below the place where they ſow their Seeds, a ſmall piece of Tile to ſtop the running down of the Tap-root, which occaſions it to branch when it comes to the Tile, which is a very good way, and will much increaſe the number of the ſmall Roots, and is a great help to its tranſplantation, and many ſay, that it much helps a Tree where 'tis not removed, but ſuffered to grow from the Seed.

Removing of them. The beſt time for the removing of Oaks and all other Trees that ſhed their Leaves in Winter, is in *October* as ſoon as the Leaf begins to fall, or in *February* juſt before the Sap begins to riſe, and take care in planting of them not to ſet them deeper than they ſtood before, for if the Roots be ſufficiently covered ſo as to keep the Body ſteady and erect 'tis enough. The Poſition likewiſe of the Tree ought to be carefully obſerved, for the Southern ſide of the Tree being more dilated and the Pores more expoſed to the heat of the Sun by a ſudden tranſpoſition of the Tree in a cold time of the Year, the Tree will be very much prejudiced.

Soil. The Oak thrives beſt on the richeſt Clay, tho' it will grow well on moiſt Gravel, or the coldeſt Clay, which moſt other Trees abhor, and even in ſome places ſtrike Root between Rocks and Stones, and grow almoſt upon any kind of Land: But the beſt Timber for Ships is that which grows on the ſtiffeſt Land, it being the moſt ſolid, tough and durable; whereas what grows on light Land is light and brittle, and not of a ſolid Grain, which tho' 'tis beſt for the Joiner's uſe, is not of the value of the other for Ships and Building; but 'tis in the moſt Southern warm parts of *England* that they thrive beſt in ſtiff Clay, and not ſo well in the Northern parts, becauſe they have not ſo much the heat of the Sun to warm thoſe cold Soils; for Oaks, as to the Soil and temperature of the Air, as *Vitruvius* well obſerves, neither proſper in very hot Countries nor very cold, but affect a temperate Climate, which I ſuppoſe is the reaſon of our *Engliſh* Oaks ſo much out-doing thoſe of all other Countries: And where Oaks grow naturally and in abundance, it is a ſign of their being good and their liking the Soil.

If you would propagate them for Timber, do not cut off their Heads, nor be too buſie in lopping of them, except it be of ſear and unthrifty Branches, or that you are to remove them from a good Soil to a bad, in which caſe 'tis neceſſary to have as much Root and as little Top as you can, or that you deſire them for Shade, bearing of Maſt, or for Fuel.

Its Uſes. 'Tis needleſs to mention either the uſefulneſs of Oak for the building of Houſes and Ships, or to ſhew how much our *Engliſh* Oak exceeds that of all other Countries for that uſe, ſome of it being ſo tough that our ſharpeſt Tools will ſcarcely enter it, nor the Fire it ſelf conſume it but ſlowly, as having ſomething of a ferruginous metalline ſhining nature, proper for robuſt uſes: It is doubtleſs of all Timber hitherto known the moſt univerſally uſeful and ſtrong; for tho' ſome Trees be harder, as Box, Cornus, Ebony and divers *Indian* Woods, yet we find them more fragil, and not ſo well qualify'd for the ſupport of great weights, nor any Timber ſo laſting where 'tis to lie ſometimes wet and ſometimes dry. The fine clear grained Oak, if it be of a tough kind, is beſt for the ſupport of Burdens, as for Columns, Summers, *&c.* and the more tender ſort of a fine clear Bark, as being the beſt to cleave, is the moſt uſeful for Pales, Laths, Coopers Ware, Shingles, Wainſcot, Wheel-ſpoakes, Pins, *&c.* as the knottieſt and coarſeſt is beſt for Water-works and Piles, becauſe it laſts longeſt and drives beſt; and the crooked Oak, if firm, is beſt for Knee-timber in Ships, for Mill-wheels, *&c.* And if the planting of Oaks were more in uſe for Woods it would ſpoil the Coopers trade for the making of Hoops, either of Haſle or Aſh, becauſe one Hoop made of the young Shoots of a Ground-Oak would out-laſt ſix of the beſt Aſh. The ſmaller Truncheons and Spray makes Billet, Bavine and Coals, and the Bark is of price with the Tanner and Dyer, to whom the very Saw-duſt is of uſe, and the *Uvæ Fungus's* to make Tinder of. Oaks bear alſo a kind of a Knur of a cottony matter which was us'd of old for Wicks of Lamps and Candles. *Prævotius* in his *Remedia Selectiora* mentions an Oyl extracted chymically *è quercina Glande*, which continues the longeſt of any whatſoever, ſo that an Ounce of it can ſcarcely be conſumed in a Month, tho' kept continually burning; and Mr. *Joſſelin* in his *New England* Rarities, ſays, That they there make an Oyl of the Acorn growing on the white Oak by taking of the rotteneſt Maple-wood and burning of it to Aſhes, of which they make a ſtrong Lye, wherein they boil the Acorns till the Oyl ſwims on the top in great Quantities, Quanties, which they put into Bladders to anoint their Limbs with, which it exceedingly corroborates and ſtrengthens, and ſerves them to eat with their Meat, being exceedingly clear and ſweet Oyl; which perhaps is what our Acorns will produce too: If not, I think it would be of uſe to procure ſome of thoſe Acorns to plant here, which may be eaſily done by them that have a correſpondency there. *Varro* ſays, they made Salt of Oak Aſhes, and ſometimes ſeaſoned Meat with it; but more frequently ſprinkled it among their Seed-corn to make it fruitful; and Acorns are of great uſe for the fatting of Hogs, Deer, Poultry, *&c.* and formerly ſerved for the Repaſt of Men too.

Chap. VI. *Of the Elm.*

ELMS are of ſeveral ſorts, and differ much according to the Soil and Climate they grow in. The ſorts moſt worth our care and culture are, *firſt*, the common Elm, which hath a very rough Bark and Leaf, ſome of which are of a rounder form than others; this ſort of Tree grows to a very great heighth and bigneſs, eſpecially thoſe that have the roundeſt ſort of Leaves. 2*dly*. That which they call the Witch-elm, which kind in bigneſs and heighth is like to the firſt ſort, only it hath a much ſmoother Bark, and in many places is putting forth Burrs and Knobs, the Leaf being alſo ſmooth and long, and varies much for breadth and length according to the Soil it grows in. The third ſort of Elm is by ſome called the Witch-haſle or broad-leav'd Elm, the Body and Boughs of which have a ſmooth Bark like the Witch-elm, and the Shoot and Leaf is much like that of the Haſle; upon which account, I ſuppoſe, it hath its name: The Leaves in ſome Soils are of a very great ſize, and where it thrives it will make very large

large Shoots. I have one of theſe ſort of Elms that I brought out of *Derbyſhire*, in my Nurſery, that hath Leaves near ſix Inches long, and about five broad. It every Year ſends forth Shoots of fourteen or fifteen Foot long. It will grow to a great bigneſs, being the quickeſt grower of any kind of Elm, but 'tis not ſo apt to ſpire up as the other ſorts, being more inclined to branch into Arms.

How raiſed. Elms may be propagated by Seeds, which are ripe about the latter end of *March*, or beginning of *April*, which gather and lay in a Room to dry a day or two, and then ſprinkle them in Beds prepared with good freſh Earth, ſifting ſome of the fineſt Mould thinly over them, and water them as need requires. When they are come an Inch above the Ground, which they may do in four or five Months time, ſift ſome more fine Earth about them to eſtabliſh them, keeping of them clean weeded for the two firſt Years, and the ſide Boughs trimm'd up till they are fit to remove into the Nurſery to be placed at wider diſtances, and from thence to be removed to ſuch places as you have occaſion to plant them in. But the taking of ſuch up as are of a plantable ſize from Hedge-rows and Woods is much more eaſie and expeditious; their not being apt to run down with a Tap-root, like an Oak, makes them more eaſie to tranſplant; only thoſe that you take out of Woods, as they ſtand there very warm, will not thrive ſo well if they are planted directly into an open place, as if you plant them firſt into your Nurſery for two or three Years, and from thence tranſplant them to Avenues, Hedge-rows, *&c.*

Of Layers or Suckers. Elms may likewiſe be produced of *Layers* from a Mother-plant, as is before directed, or from *Suckers* taken off from the Mother-roots of great Trees after the Earth hath been well looſened from them. Or if ſuch Stubs as have been felled be fenced in ſo far as the Roots extend, they will furniſh plenty of young Plants, which may be tranſplanted from the firſt Year or ſecond ſucceſſively, by ſlipping of them from the old Roots. I ſhall not trouble you about the raiſing of them of Truncheons or Lops, becauſe I could never find them to take; only ſometimes ſome of the ſmalleſt Suckers, when the Sap is newly ſtirring in them, if they are ſlipt off from the Tree, will grow, tho' not rooted.

By Trenches.

Another way is to ſink *Trenches* at ten or twenty Foot diſtance from Elms that ſtand in Hedge-rows in ſuch order as you deſire they ſhould grow; and where theſe Gutters are, many young Elms will ſpring from the ſmall Roots of the adjoining Trees, which after one Year being cut off from the Mother-roots with a ſharp Spade, if you tranſplant them they will prove good Trees without doing any injury to the old ones.

There is a fourth way no leſs expeditious and ſucceſsful, by baring ſome of the chief Roots of a thriving Tree within a Foot of the Trunk, and chopping the ſame with an Ax, or making ſome ſmall Clefts in them with Wedges, into which Clefts put ſome Stones to prevent the Clefts cloſing again and to give Acceſs to the Wet, which cover three or four Inches thick with good Mould; and one ſingle Elm thus managed will be a good Nurſery, whoſe Suckers after two or three Years you may ſeparate and plant out as you ſee occaſion.

Of removing of them.

The beſt time for the Tranſplantation of Elms is in *October* or *February*: Of all Trees that grow there is none that better ſuffers Tranſplantation than the Elm doth, for you may remove them of what bigneſs you will, even of twenty or thirty Years growth; nay, if they are planted in a good Soil, I think thoſe of eight or ten Inches circumference to grow better than ſmaller ones, provided the Bark be ſmooth, tender and void of Wens, unleſs they are removed at the firſt taking of them off from the Mother-roots, if they are of any great bigneſs when you remove them. You muſt totally disbranch them, leaving only the Summit entire, unleſs the Soil be very good; it may be neceſſary to head them too, but then it will be convenient, as ſoon as you can, to leave a leading Branch near the Top to ſpire up and cover the Wound; for Elm being a ſoft Wood, the Wet is apt to ſink into it and to ſpoil the Tree. They muſt be taken up with as much Earth and Roots as you can, and have a great deal of watering; and the ſooner they are removed after the taking of them up the better, except you ſpeedily lay them in a Trench and cover them with Mould till you have time to tranſplant them: They ſhould be planted on the Surface of the Earth, it being a very great Error, in any Soil, to plant Trees deep, and let the Roots be handſomely ſpread, and the Trees well ſtaked and defended from Cattel: They delight to grow the neareſt together of any Trees, which cauſes them to run up ſpiring, and protects them from the Winds.

Soil. The Elm thrives beſt in a rich black Mould; eſpecially where they can at ſome depth meet with ſome refreſhing Springs or Moiſture, and will grow almoſt on any ſort of Land; and tho' they thrive not ſo well in too dry, ſandy or hot Ground, or thoſe that are too cold or boggy, yet where the Earth is a little elevated above theſe Annoyances, you will find them to thrive upon the worſt Land, as may be obſerved in ſeveral bad Soils, where Mounds and Banks are caſt up, eſpecially ſome ſort of Witch-Elms, which in many Places grow on the drieſt Gravel, tho' not to any great Advantage.

The Elm, by reaſon of its aſpiring and tapering growth (unleſs it be topped to enlarge the Branches and to make them ſpread low) are the leaſt offenſive to Corn, Paſture and Hedges of any Tree, to which, and the Cattel, they afford a benign Shade, Defence, and agreeable Ornament.

When you would fell them, let it be about *November*, *December* or *January*, after the Froſt hath well nipp'd them, and that the Sap is fall'n into the Root, which will cauſe all ſort of Timber to be more durable and laſting; and if you find them any way unthriving, fell them, and rather truſt to their Succeſſors; for the leaſt decay in any part of them will quickly ſpoil the whole Tree.

But if you have occaſion to uſe them for Firing, rather ſhred up the Boughs than lop them; the beſt time for the doing of which is in *February*, and by that means you may cauſe them to ſpire up, always taking care to preſerve the top, becauſe it protects the Body of the Tree from the Wet which commonly invades that part firſt, and becauſe of its ſpungineſs the Rain eaſily penetrates, and will in a ſhort time periſh them to the Heart, by which means they will not only yield more Firing than if lopp'd, but Timber too, eſpecially if you take care to ſhred them up once in ten Years, and that you cut the Boughs cloſe to the Body, or elſe the remaining Stubs will immediately grow hollow, and ſerve as ſo many Conduits or Pipes to hold and convey the Rain to the Body of the Tree; but if you lop any let it be the Witch-Elm, which is much the hardeſt and tougheſt Wood, and bears the beſt top; or you may form them into Hedgerows by plaſhing of them, and thickning of them to the higheſt Twig, which will afford a magnificent Fence, and be a good ſhelter againſt the Winds and the Sun.

Elm is a Timber of extraordinary uſe, eſpecially in extreams, where it may be continually wet or dry, and therefore proper for Water-works, Mills, Soles of Wheels, Pipes, Aqueducts, Ship-Keels *Uſe.*

Keels and Planks beneath the Water-line; and alſo the Witch-Elm, eſpecially if knotty, is good for Wheel-naves, becauſe of their being the tougheſt Timber, and the ſtrait ſmooth Elms for Axel-trees, Kerbs for Coppers, Boards, Chopping-blocks, Trunks, Coffins, Dreſſers, and for Carvers-work, Shovel-boards of a great length and fine colour; and the Roots of the knotty, curled ſort are near as good as Wallnut for Cabinets, and are often ſold for it, which they colour by laying in a wet Saw-pit that hath Oak Saw-duſt in it, where they let it ſoak for a Month, which gives the Grain of it a black Colour like that of the Wallnut-tree; and if Elm Timber, as ſoon as it is ſawn, be put into Water and lie three Weeks, and after the taking of it out be kept dry, it will prevent the Worms eating of it, and cauſe it to laſt as long as Oak, nay ſome Elm-trees found buried in Boggs have turned like the moſt poliſhed and hardeſt Ebony, as Mr. *Evelyn* ſaith, and were only diſcernable by the Grain. They make likewiſe very good Eſpaliers, if made to comply well with the Frames, and kept conſtantly clipp'd. Beſides which ſeveral uſes, it makes the ſecond ſort of Charcoal, and the very Leaves of it are not to be deſpiſed, for being gathered green, and ſuffered to dry in the Sun upon the Branches, and the Spray ſtripp'd off in *Auguſt*, will prove a great relief to Cattel in Winter, or ſcorching Summers when Hay and Fodder is dear, which they will eat before Oats and thrive exceedingly with it, but then you ought to lay the Boughs in ſome dry places to prevent their muſting: In ſome parts of *Herefordſhire* they gather them in Sacks for their Swine and other Cattel: But ſome ſay they are ill for Bees in that they ſurfeit of the blooming Seeds, which makes them obnoxious to the laſk, and that therefore they do not thrive in Elm-Countries.

Chap. VII. *Of the Aſh.*

OF *Aſhes* ſome reckon that there are two kinds, the Male and the Female, and that the Male affects the higher Grounds, and the Female the lower, which they eſteem the whiter Wood and the taller of growth: But I could never perceive any greater difference in them than what the Soil occaſioned; but tho' there is not much difference as to the form of the Tree, there is in the Timber, as in that of the Oak, ſome being much tougher than others, the toughest growing on the ſtiffeſt Land; but the beſt to cleave is that which grows on Gravel, Sand, or other light Lands.

How raiſed. The Aſh is beſt raiſed of the Keys gathered when they begin to fall, which is about the latter end of *October*, and during the enſuing Month, which you muſt gather to lay by and dry, and then ſow them any time between that and the laſt of *January*; thoſe that are gathered from a young thriving Tree, which produces the faireſt Seed, are reckoned the beſt; they ſhould be ſow'd but ſhallow, an Inch or an Inch and an half being deep enough; or you may ſow them upon the top of the Ground and they will come up, but 'tis beſt not to ſow them in froſty Weather, they will lie 'till the next Spring after before they appear, except you have a mind not to wait ſo long for their ſpringing, in which caſe you may prepare them for ſpearing by laying the Keys in Earth or Sand (which is the beſt) juſt as you gather them, laying one Layer of Sand, and another Layer of Keys, and then laying another Layer of Sand continuing ſo to do 'till all your Quantity is diſpoſed of, obſerving to keep your Sand moiſt, and in a covered airy place, and the next *January* come twelve-Month after you may ſow them, and they will come up the next Spring, but do not let them lie too long uncovered when you take them out of the Sand leſt they ſhould ſpear, and the Air dry and ſpoil the Shoot. But if you would make a Wood of them at once, dig or plow up a parcel of Land and prepare it as for Corn; only if you plow it give it a Summers fallowing to kill and rot the Turf, plowing it as deep as you can, and with your Corn, eſpecially Oats, ſow your Aſh-Keys, and at Harveſt taking off your Crop of Corn the next Spring you will find it covered with young Aſhes, which by reaſon of their ſmall growth the firſt Year ſhould be kept well weeded and well ſecured from Cattel, who are very deſirous of cropping of them; the ſecond Year they will ſtrike Root, and quickly ſurmount what Impediments they meet with.

Of their removal.

The beſt time to remove Aſhes is in *October* and *November*; they are beſt tranſplanted young because of their deep rooting, which makes them hard to take up when they grow big; but if you would tranſplant them large, raiſe them firſt in your Seminary, and then remove them into your Nurſery, and from thence into the places where you deſign to plant them out, which will be a great advantage in that it will inable you to take them up with good Roots, as I ſaid before of the Oak; but as 'tis a Tree that hath a large Pith, you muſt avoid heading of them if you can, and content your ſelf only with cutting off the ſide Boughs, which will be better for the Timber, and be likewiſe ſparing of the Roots, except the downright Tap-root, which you may abate as you ſee convenient. Some cut the young Aſhes off about an Inch above the Ground, which cauſes them to make very large ſtreight Shoots, which they call Ground-Aſh; and 'tis a very good way where you deſign them for Under-Wood.

Young Aſhes are ſometimes in Winter Froſt-burnt, which makes them look as black as a Coal; you may in ſuch caſes make uſe of the Knife, yet they commonly recover of themſelves, tho' it is but ſlowly.

'Tis no way convenient to plant Aſh in plow'd Lands, eſpecially where the Soil is flete, becauſe the Roots are apt to run upon the Top of the Ground, which makes them troubleſome to the Coulter, and the dropping of the Leaves is eſteemed hurtful for the Corn, and at *Michaelmas* time makes the Butter bitter when eaten by the Cattel: But in Hedge-rows and Plumps they will thrive very well, where they may be ſet at ten or twenty Foot diſtance. In planting of a Wood of ſeveral kinds of Trees for Timber, every third ſet, at leaſt, ſhould be an Aſh, it being a Timber that is ſaleable at any ſize.

Soil. Aſh delights moſt in a light dry Mould, the richer and fatter 'tis the better, yet it will grow on any ſort of Land if it be not too ſtiff, wet or boggy, tho' on Banks or Riſing-grounds near Rivers and running Streams they will thrive exceedingly, or in wet Lands that are well drained.

Uſe. The Ground-Aſh (like the Oak) much excels a Bough or Branch of the ſame Bulk for ſtrength and toughneſs, and is a good laſting Timber where 'tis kept dry, and the Ends of it not laid in Mortar but Clay or Loam. 'Tis remarkable, that the Aſh, like the Cork-tree, grows when the Bark is as it were quite peel'd off, as hath been obſerved in ſeveral Foreſts and Parks. Some Aſh is very finely veined and much prized by the Cabinet-maker, which they often call by the Name of green Ebony, and bring it to its luſtre with *China* Varniſh. But they often vein it by art, eſpecially for Gun-ſtocks and ſuch uſes, by ſteeping of filings of Iron in *Aqua Fortis*, with which they draw Veins or improve thoſe that are natural, by tinging of them with this Liquor, which will ſink into the very Grain of the Wood, and give a black Colour whereever you touch the Wood with it.

The uſe of Aſh (next to Oak it ſelf) is one of the moſt univerſal ſorts of Timber we have, it ſerves the Soldier, Seaman, Carpenter, Wheelwright, Cooper, Turner, Thatcher, and Husbandman for Ploughs, Carts, Axle-trees, Harrows, Bulls, Oars, Blocks for Pullies, Sheffs; and like the Elm, is good for Mortaſſes and Tenons, and likewiſe for Palliſade-Hedges, Hop Garden-Poles, Pikes, Spars, Handles, Stocks for Tools, Spades, Guns, *&c.* So that in Peace and War 'tis a Wood of the greateſt uſefulneſs; the white and rotten part of it compoſes a ground for ſweet Powder, and the Truncheons make the third ſort of the moſt durable Coal, and is of all other the ſweeteſt of our Foreſt-fuel, and will burn even while it is green. But the ſhade of the Aſh is not to be endured, becauſe it produces a noxious Inſect; and becauſe of the late budding and early falling of the Leaves, and therefore 'tis not to be planted for Walks or Ornament, eſpecially near Gardens, becauſe of their ſpreading Roots and falling Leaves, both which are prejudicial to them.

The ſeaſon for felling of this Tree is when the Sap is at reſt, from *November* to *February*; but in lopping of Pollards, it being a ſoft Wood, it ought not to be done till Spring, that the Bark may quickly come on to cover the Wound; nor ſhould the Boughs, for the ſame reaſon, grow too big, becauſe they will be ſo much the longer before they heal, and ſo give opportunity to the Rain to ſoak into the Tree, which will quickly cauſe it to decay, ſo that you muſt be forced to cut it down, or elſe both Body and Lop will quickly be but of little Value; and the ſame thing ought to be done when you ſee the Wood-peckers making holes in them, or the top Boughs begin to wither or be unthrifty, which is a ſure indication of their decay. The Keys of the Aſh are a good Pickle while young and tender; and when near ripe, being gathered about the beginning of *Auguſt*, they are good to preſerve Beer or Ale, I having drank ſmall Beer in Summer-time brewed with them without any Hops in it, that drank well at two Months old; but if ſome Hops be mixed with them they will do the better.

Chap. VIII. *Of the Beech.*

THE *Beech* is of two ſorts and numbred amongſt the Glandiferous Trees; the *Mountain-beech*, which is the whiteſt and moſt ſought after by the Turner, and the *Campeſtral* or *Wild-beech*, which is of a blacker colour and more durable.

How raiſed. Both which ſorts are raiſed from the Seeds, and are to be managed like the Oak, which is the beſt way of raiſing of a Wood unleſs you will make a Nurſery of them, and manage them as is directed for the management of Aſhes. Sow them in *Autumn* or later, or rather nearer the Spring to preſerve them from Vermin which are great devourers of them. They may likewiſe be planted of young Seedlings drawn out of ſuch places as the Seed falling from the Trees doth propagate.

How removed. In tranſplanting of them, cut off only the Boughs and bruiſed parts two Inches from the Stem, within a Yard of the top, but be very ſparing of the Roots, that is, for ſuch Trees as are of Stature. They make ſpreading Trees and a fine Shade.

Soil. They will grow on Gravel, Sand or Heathy Ground, either upon the declivities, ſides or tops of high Hills, and on Chalk or Rocks, where they will ſtrangely inſinuate their Roots into the dryeſt and hardeſt parts, and in Vallies where they grow in Conſort they riſe to a vaſt height though the Soil be never ſo ſtony or barren, if it be but natural to them; but they are very peculiar to what places they affect.

Uſes. The Beech ſerves for various uſes of the Houſewife, as for Diſhes, Trays, Rims of Buckets, Trenchers, Dreſſer-boards, Screws, Chairs, Stools, Bed-ſteads, Shovel and Spade-grafts, Floats for Fiſhing-nets made of the Bark; it is good alſo for Fuel, Bavin, Felloes of the *London* Cars, and Coal, tho' of the leaſt laſting, not to omit the Shavings of it for the fining of Wine, and the Aſhes of it with proper mixtures, is good to make Glaſs. If the Timber lie altogether under Water it is little inferiour to Elm. Of the thin *Lamina* or Scale of the Wood they make Scabbards for Swords, Band-boxes, Hat-caſes, and formerly Covers for Books, *&c.* Bees delight to hive in the Cavities of theſe Trees: It is much ſubject to the Worm, and therefore it will do well, ſo ſoon as the Timber is cut, to lay it in Water for a fortnight or three Weeks, as is before directed about the Elm. The Beech being pruned heals the Scar immediately, and is not apt to put forth ſide-boughs again. The Maſt is excellent for the fatting of Swine and Deer, to which Hogs may be drove about the latter end of *Auguſt.* Some Families have by the Seed been ſupported with Bread in ſome parts of *France*, they grinding of them for that uſe, and they afford a ſweet Oyl. The Leaves gathered ſomewhat before they are too much Froſt-bitten make excellent Matreſſes to lay under Quilts inſtead of Straw, becauſe they continue ſweet ſeven or eight Years without being muſty or hard, as Straw will be; and they are much uſed both in *Dauphine* and *Switzerland* for that uſe.

Chap. IX. *Of the Cheſnut.*

OF *Cheſnut* Trees *Pliny* reckons ſeveral kinds, eſpecially about *Tarentum* and *Naples*, but we have but one ſort common in *England* that I can hear of. We have Nuts from ſeveral parts, the largeſt and faireſt from *Portugal* and *Bayonne*, our own being very ſmall and not ſo ſweet as the former, but the way to have fair Fruit is to graft them.

How raiſed. They may be rais'd by Layers, but the beſt way to produce them is by the Nut; for which uſe chooſe the largeſt brown and moſt ponderous for Fruit, and the leſſer ones for Timber. The beſt way of planting them is like Beans, previous to which, let the Nut be firſt ſpread on a Floor to ſweat, and then cover them with Sand, and after a Month's time take them out and plunge them in Water, and the ſwimmers reject. Dry them again for thirty Days more, and then ſand them as before; after which try them again in Water, and repeat the ſame courſe with them till Spring; at which time, or in *November*, you may ſet them; but if you ſet them in Winter or Autumn, it is beſt for to ſet them with the Husk on, which is a good preſervative againſt the Mice; it is alſo neceſſary to keep Hogs from them, who will find them if poſſible.

Some ſow them confuſedly in Furrows like Acorns, and govern them like the Oak, but then the Ground ought to be well plow'd and fallow'd the Summer before, and when they ſpring, be cleans'd at two Foot diſtance after two Years growth; likewiſe Coppices of Cheſsnuts may be wonderfully thickned and increaſed by laying the tender Branches. Such as ſpring from the Nut are beſt, and will thrive exceedingly if the Ground is ſtirr'd and looſen'd about the Roots for two or three of the firſt Years of their growth, and the ſuperfluous Wood prun'd away, which you may eſteem moſt of the ſide Branches to be: They alſo ſhoot into fine Poles from a fell'd Stem, uſeful for many purpoſes.

How remove Being come up they thrive beſt unremov'd, there being hardly any Tree that bears Tranſplantation worſe, in that they will ſometimes upon removal make a ſtand of four or five Years; and therefore when you deſign to tranſplant them I ſhall not propoſe the raiſing of them in a Seminary, and to give them ſeveral Removes, as I directed about other Trees, but to raiſe them at firſt in your Nurſery, where you deſign to let them ſtand till you can plant them out into your Grounds; for they do not much run down with Tap-roots, but may be taken up at any time with good Roots, without that tranſplanting of them that is upon that account neceſſary for the removal of other Trees; and in the removal of them I am rather for cutting only of the ſide-boughs, than heading of them. The beſt time for removing of them is in *November* and *February*; they may be planted at twenty or thirty Foot diſtance for Timber, and for bearing Fruit at forty, but for other uſes a great deal nearer.

Horſe cheſsnut I may here bring in the Horſe-cheſsnut, which being eaſily increaſed by Layers grows into a goodly Standard, bearing a fine Flower, and is now all the Mode for Walks and Avenues in *France*, being at firſt brought from *Conſtantinople* to *Vienna*, and from thence to *France*, tho' directly from the *Levant* to our Climate, where it grows very ſpeedily to a large Stature, eſpecially if planted in a rich Soil near Water.

Soil. The Cheſsnut delights moſt in a light hazel Brick Earth, or black Mould, or moiſt Gravel, and will grow well on Clays, Sand or any mixed Soil, eſpecially if raiſed from the Nut without tranſplantation, and upon expoſed bleak places, and the pendent Declivities of Hills to the *North*, in dry airy places, and ſometimes near Marſhes and Waters, where the Water doth not touch the Roots, which when it doth, is very prejudicial both to the Timber and Fruit; but they affect no other Compoſt ſave what their own Leaves afford them, the dropping of which makes them injurious to what grows under them. They bear Cold better than Heat.

Next unto the Oak the Cheſnut is the moſt *Uſe.* ſought after by the Carpenter and Joyner for Building; and before the uſe of *Firr*, was much made uſe of, many of the ancient Houſes in *London*, having been built of it. It affords the beſt Stakes and Poles for Palliſadoes and Hops, good Props for Vines, and makes extraordinary Hoops, for which uſe only they keep ſeveral Coppices in *Kent* all of Cheſnut, near the Water-ſide, of which they make great advantage by ſending of them to *London*. The Timber is likewiſe good for Mill and Water-works; and the Trees are very good ſhelter, being ſet on the North-ſide of other Plantations, and for Walks and Avenues. The Timber doth alſo well for Columns, Tables, Cheſts, Chairs, Stools, Bed-ſteads, Tubs and Wine-casks, which it preſerves with the leaſt Tincture of any Wood whatſoever: Some ſay, that if the Timber be dipp'd in ſcalding Oil, and well pitch'd, that it will become very durable: It is very apt to decay within when it ſhews fair to the Eye. The Coals are excellent for the Smith, being ſoon kindled and ſoon extinct, but the Aſhes are not good for Lee, becauſe they are apt to ſtain Linen.

As for the Fruit, it is better beat down from the Trees ſome little time before they fall of themſelves, becauſe they will keep the better, or elſe you muſt ſmoak-dry them, but not if you deſign to plant them. And tho' here in *England* they are Food for Swine, yet in other Countries they are much eſteemed, and would certainly be more uſeful and nouriſhing to our Countrymen than many of the Herbs and Roots that they eat. In *Italy* they boil them with Bacon; and they are certainly to be preferr'd before our Cole or Beans, for they afford a good robuſt Diet, and are very nouriſhing, being much commended by *Galen* above all other ſorts of Nuts; they alſo boil them in Wine, and roaſt them on Embers, and ſome grind them to Meal and make Bread and Fritters of them, and the *French* Cooks uſe them in ſtew'd Meats, Beatil, Pies, *&c.* The beſt way to preſerve them for uſe, is to keep them in Earthern Veſſels in cool places, but ſome keep them in a Smoak-loft, others in dry Barley-ſtraw, and others in Sand, *&c.*

Chap. X. *Of the Wallnut.*

THE *Wallnut is* of ſeveral ſorts, as the large ſoft Shell, and the ſmall hard Shell; the Wood likewiſe differs, ſome of which is of a whiter, and ſome of a blacker Grain than the other; the black grain'd bears the ſmalleſt, hardeſt Nut, and the Timber is much to be preferr'd, the beſt ſort of which are thoſe that grow in *Virginia*, which bear a kind of a ſquare Nut, from whence we might eaſily procure them. Next unto theſe are thoſe of *Grenoble*, which are much priz'd by the Cabinet-makers.

How raiſed.

The beſt way of raiſing *Wallnuts* is of the Nut, which you may ſet like Beans: Gather the Nuts from a young thriving Tree, bearing a full plump Kernel, which is beſt to be beaten off the Tree (as was preſcrib'd of the *Cheſnut*) ſome Days before they fall from the Branches of themſelves, and kept in their Husk, or without, 'till Spring; or by bedding of them (being dry) in Sand or good Earth. You may ſet them about the latter end of *February*, or beginning of *March*, or earlier; but if you can, ſet them with the Husk on, becauſe the bitterneſs of it is a good preſervative againſt the Worms, and if you chop ſome Furz and ſtrew about them under Ground, it will be a good Defence for them againſt the Rats and Mice.

It is a Tree that bears Tranſplantation but ill, and therefore doth much better to ſtand where it is rais'd of the Nut; but if you have occaſion for the removal of them, let not your Trees be above four Years old when you remove them; and if they be once before remov'd from your Seminary to your Nurſery it may do well; which firſt Tranſplantation may be perform'd at two Years old, and obſerve as near as you can, to remove them to the ſame ſort of Land that they were rais'd on, for it is very difficult to make them either grow or proſper on a different Soil, but in the removal of them by no means cut the Head, only ſhred up the ſide Branches, becauſe of the hollow Pith which is apt to let in the Water, and be as ſparing of the Roots; any thing of Bruiſes is very prejudicial to them. You may likewiſe, as I propos'd for the *Cheſsnut*, put a Tile-ſherd under them to occaſion the ſpreading of the Tap-roots, and they may be grafted or budded, which will improve the largeneſs of their Fruit. The time to remove them is in *November* and *February*, and the beſt Compoſt for them is Aſhes. They ſhould be planted at forty Foot diſtance at the leaſt, becauſe they love to ſpread both their Roots and Branches, tho' they will grow amongſt other Wood provided you ſhred up the ſide Boughs. *How tranſplanted.*

The *Wallnut* delights moſt in a dry ſound rich Mould, eſpecially if they have Chalk or Marle underneath them, and will grow well on any Land that is dry, where they are rais'd from the Nut, and where they are protected from the Cold (tho' they affect Cold rather than extream Heat) and grow in Pits, Vallies, High-way-ſides; alſo in Lime-ſtone Ground, if Loomy, and on Hills that are Chalky; and they are ſo far from prejudicing of Land, that in *France* they plant them in their Corn-fields, eſteeming of them a help to their Corn, in preſerving of it from the Cold; nor are the *Soil.*

Roots any hinderance to the Plough, it being a Tree that will root deep enough where they have a Soil that will allow of it.

Uſe. The *Wallnut-Tree* is the moſt beneficial Tree that can be planted, not only for the value of the Timber, but the conſtant Profit they bring by their Fruit; and if the Timber were more plentiful, we ſhould have far better Utenſils of all ſorts for our Houſes, as Chairs, Stools, Bed-ſteeds, Tables, Wainſcot, Cabinets, *&c.* than what is commonly made of *Beech*, and not ſo ſubject to the Worm. They make fine Avenues, and do excellently near Hedge-rows, of which I am ſorry Foreign Parts, almoſt every where, give more ample Examples than our own Country, tho' many Gentlemen, of late, are much to be commended for the Improvements they have made this way. Of what univerſal uſe this Timber is to the *French* may be ſeen in every Room both of Rich and Poor. It is of particular eſteem with the Joyner for the beſt colour'd and grain'd Wainſcot, with the Gun-ſmiths for Stocks, and excellent for the Bodies and Wheels of Coaches. In *New England* they make Hoops and Bows with it, and the Drum-maker uſes it for Rimbs, the Cabinet-maker for Inlaying, eſpecially the part about the Roots when it is curled and knotty, which ſells often at very great prizes; but to render it the better colour'd, the Joyner puts the Boards into Ovens after the Batch is drawn, or lays them in a warm Stable; and when they work them they poliſh them over with its own Oil very hot, which makes it look black and ſlick; but as it is ſubject to ſhrink, it ought to be well ſeaſon'd before it is work'd. It is not good to uſe for Beams or Joyſts, becauſe of the brittleneſs of it: And beſides the uſes of the Wood, the Fruit with the Husk, when tender and very young, makes a very good Preſerve, and alſo is us'd to pickle like Mangoes, and when ripe they are very good Food, afford a very uſeful Oil for *Painters*, and for Gold Size and

Varniſh to poliſh Walking-ſtaves and other Works with, which is wrought in with burning. One Buſhel of Nuts will yield about ſeven Pounds of Oil, which in *France* is much uſed to burn in Lamps inſtead of Candles; from whence, in times of Peace, we are ſupply'd with great Quantities, when it might with much more advantage be made a home Commodity. The young Timber is held to make the better colour'd Work, but the older being more firm and cloſe is the beſt for Cabinets. That the Husk may open, lay them up in a dry Room, turning of them with a Broom, but without waſhing, for fear of Mouldineſs, and thoſe that come not out eaſily of their Husk ſhould be laid to mellow in the Heaps, and the reſt till the Sun in the Shells dry, elſe they will be apt to deſtroy the Kernel; but the beſt way to keep them is to bury them in the Ground in a leaden or earthen Pot cloſe cover'd, that the Vermin may not come at them, and they will keep plump all the Year: They are very good for Hogs, but too chargeable a Proviſion for them with us. The very Husk and Leaves being macerated in warm Water, and the Liquor pour'd on Walks or Bowling-greens, will kill the Worms without hurting the Graſs; and the green Husks boil'd makes a good Colour to dye a dark Yellow without any mixture; and if they, or the firſt peeping red Buds and Leaves be reduced to Powder, it will ſerve inſtead of Pepper to ſeaſon Meat, or for Sauce, and the Kernel being rubb'd upon the Cracks and Chinks of a leaky Veſſel, ſtops it better than any Pitch, Wax or Clay. After the Nuts are beaten down, the Leaves ſhould be ſwept into heaps and carry'd away, becauſe their bitterneſs impairs the Ground, and injures the Trees.

Chap. XI. *Of the Mulberry Tree.*

THE *Mulberry Tree* is of two ſorts, that which bears the black *Mulberry*, which I mention firſt, as moſt known amongſt us, and that which bears the white Berry, having a ſmoother Leaf, and is much to be preferr'd for its uſefulneſs for Silk-worms, in that it buds near a Fortnight ſooner than the black, and the Leaves are finer and tenderer for them when young, which are two very great advantages to them, being much planted in the Silk Countries, and would certainly turn to very great advantage if here made uſe of to the ſame purpoſe, it being a Tree that will thrive well in our Climate, and may be had of moſt of the Gard'ners near *London.*

How raiſed.

Mr. *Evelyn* ſays, they raiſe them in the Countries where they cultivate them for Silk-worms by ſeparating of the Seeds from the Berries, which he ſays they do, when gather'd thorough ripe, by bruiſing of them in their Hands, and waſhing of them in ſeveral Waters, and the Seed, which is very ſmall, will ſink to the bottom while the Pulp ſwims on the top; which muſt be carefully taken off, and the Seeds taken out and laid on Linen cloth, and dry'd, for which an Hour is ſufficient; but the ſowing of the ripe *Mulberries* he prefers, which ſhould be a little bruis'd or ſquaſh'd, and ſow'd in rich black Garden Mould, and ought to be well moiſtned at firſt ſowing, tho' rarely water'd afterwards till they peep; they muſt be kept warm by being thinly cover'd with Straw to protect them from the Heat and the Birds. The ſeaſon of ſowing them is in *April* or *May*, tho' ſome forbear till *July* or *Auguſt*; and ſome ſow them in *September*, which I think the beſt time; at the firſt keep them moderately ſhelter'd and clean weeded, and at two Years growth, about *October* or *February* you may draw them up gently, and dipping of the Roots in Water, tranſplant them into a warm place in your Nurſery, cutting of them within three Inches of the Ground, and giving them three dreſſings or half-diggings to kill the Weeds in *April*, *June* and *Auguſt*. The ſecond Year purge them of ſuperfluous Branches, reſerving the principal Stem; of which, if the Froſt injure any part, cut it off. This way of raiſing of them may do well in hot Countries, but I ſhould rather chooſe to raiſe them of Layers, from another Plant or Suckers at the Roots of other Trees, which will take very readily: The beſt time of doing of which is in *February*, leaving not above two Buds out of the Ground, which you muſt carefully water and they will be well rooted in two Years. Dr. *Beal* ſays, they may be grafted in the *Black Mulberry* in Spring or inoculated in *July*. The Scions are beſt to be taken off of an old Tree that bears broad even Leaves, which being the moſt uſeful part of the Tree is chiefly to be conſider'd.

How tranſplanted. It is a Tree ſomething difficult to tranſplant, except it be planted in a rich Soil and while young, and be kept well water'd; do not cut off the Head in removing of them, but trim up the ſide Branches, ſo as to leave but a ſmall Head on them. The beſt time to tranſplant the *White Mulberry* is in *February*, it being a more tender Tree than the *Black*.

Soil. They delight in a light dry rich Mould, which if it is well manur'd with Aſhes or Horſe-dung will be the better. If they are expos'd to the Sun and Air, they thrive the better.

The beſt time to tranſplant them is at about five Years growth in *September* and *October*, in which Work ſpare cutting of the Roots as much as you can, and take great care to ſave them in taking them up; and if you find any of the Branches dry or hurt with the Froſt, cut them off, and where the Branches grow too thick, a little thinning of them for the firſt Year or two after they are tranſplanted may do well, and likewiſe digging and ſtirring of the Earth about their Roots greatly improves them.

Of the two ſorts of *Mulberries* the *White* is much the fineſt, being called ſo, becauſe the Fruit is of a paler Colour, more luſcious and leſſer than the *Black*; the Rind likewiſe is whiter, and the Leaves of a mealy clear green Colour. It is a beautiful Tree for Walks and Avenues, and gives a fine Ornament to the Silk Country, where they plant them, in Walks or regular Groves about their Fields.

Uſe. The Timber will laſt as long in Water as the moſt ſolid *Oak*, and the Bark makes good Baſt Ropes; it will ſuffer no Caterpillar or Vermin to breed on it, either as it grows or when cut down, except the Silk-worm only. The chief Value of the Tree is the Leaf for the Silk-worm, for which uſe they are let for great Sums, ſingle Trees yielding to the Proprietors ſometimes twenty Shillings *per Annum*, and to the Owners of the Worms ſix or ſeven Pounds of Silk, which commonly ſells for as many Pounds in five or ſix Weeks time; beſides which, the Leaves are good for Cows, Sheep and other Cattel, eſpecially young Hogs, being boil'd with a little Bran, and the Fruit is very good for Poultry.

The Leaves beſt for Silk-worms are thoſe gather'd from Trees of about ſeven or eight Years growth, for the gathering of them from young Trees is apt to burſt the Worms; ſo doth likewiſe the Leaves of Trees planted in too wateriſh a Soil, and thoſe that are ſick and yellow. The Leaves ſhould be clipp'd off and let fall upon a Sheet or Blanket and not gather'd by Hand, tho' that is better than to ſlip them off, which galls the Branches, and bruiſes the Leaves. Gather them as dry as you can, but if you are neceſſitated to gather them in wet Weather, put the Leaves in a pair of Sheets well dry'd by the Fire, and ſhake them up and down till the moiſture be drank up in the Linen, and then ſpread them on another dry Cloath. The top Leaves and the oldeſt ſhould be gather'd laſt, as being moſt proper to feed the Worms towards their ſpinning time.

Chap. XII. *Of the Serviſe-Tree.*

THE *Serviſe-Tree*, Mr. *Evelyn* ſays, is of four kinds, but there is little difference of thoſe which we have in *England*, except only that ſome of them bear a much larger Berry than the others.

How raiſed. They may be rais'd either by Layers or of the Berries, which being ripe, that is, rotten, you may eat or rub off the Pulp, and ſow the Seeds in your Seminary, which is beſt to be done as ſoon as you ſeparate them from the Pulp; or if you have a mind to keep them longer, you may keep them in dry Sand till after *Chriſtmas*, and from the Seminary remove them to your Nurſery, and from thence tranſplant them as you have occaſion; but becauſe they may often be met with in Woods, it being a Tree that admits well of Tranſplantation, moſt furniſh themſelves with them that way. They may likewiſe be either grafted or budded upon their own kind to a great Improvement of their Fruit.

Soil. They delight in rich Clay or the Hazel-brick Earth, where it is rather moiſt than dry. In dry Grounds they never bear well, tho' they will grow almoſt on any Soil when they are rais'd of the Seeds.

How tranſplanted. They may be tranſplanted of any bigneſs, it being a Tree that bears Tranſplantation well: If you head them the Wound will quickly heal up.

Uſe. The Timber is uſeful for the Joyner, Engraver of Wooden Cuts, Bows, Pullies, Screws, Mills, Spindles, Piſtols and Gun-ſtocks, being of a very fine Grain, and is very laſting, being rubb'd over with Linſeed-Oil well boil'd, and may be made to counterfeit *Ebony* and moſt of the *Indian* Woods; alſo it is uſed to build with, yielding Beams of a conſiderable Subſtance, and the Shade is beautiful for

Walks. They give an early Preſage of the Spring, and peep out in the ſevereſt Winters.

Chap. XIII. *Of the Maple.*

THE *Maple* Mr. *Evelyn* reckons of ſeveral kinds; he commends moſt the *German Air* and the *Maple* of *Virginia*; as for the ſorts we have in *England* I can find no great difference in them; thoſe that we keep ſhred up to run to Standards, have a fine clear Grain, and thoſe that are pollarded grow the moſt knotty and full of Burrs, it being a Tree very ſubject to put out ſide Branches, which fills it with Knots; but it is prejudicial to let it grow tall where there is any Wood or Trees under it, becauſe of a clammy Dew that ſticks to the Leaves, which when waſh'd off by the Rain, glues up the Buds of what Trees or Buſhes grow underneath, and ſo kills them; and therefore they are not fit to grow in Hedges or amongſt Wood.

How raiſed. It is produc'd, and doth produce it ſelf by the Seed, Layers, and from the Roots of old Trees, like the Elm, and by Suckers, which occaſions their being ſo plentiful. The Seeds will lie, like the *Aſh*, till the next Year after they are ſow'd before they come up, and therefore they may be order'd the ſame way.

How tranſplanted. They may be tranſplanted almoſt of any ſize, and may eaſily be remov'd, in that they do not run down with Tap-roots ſo much as many other Trees do; the beſt time to remove them is in *October* or *February*.

They affect moſt a ſound dry Mould, eſpecially Banks, in which their Roots delight to run, and deſire rather to grow on Hills than Bottoms, tho' they hardly refuſe any ſort of Soil.

Uſe. The Timber is very uſeful for the Turner for Diſhes, Cups, Trays, Trenchers, *&c.* and when it is clean and without Knots it makes excellent Board, and for its lightneſs is often employ'd by the Muſical Inſtrument-maker under the Name of *Aier*; but that which is fulleſt of Knots and Burs is of greateſt Value, being much priz'd by the Cabinet-maker.

Chap. XIV. *Of the Sycamore.*

THE *Sycamore*, Mr. *Evelyn* ſays, is our *Acer majus*, one of the kinds of *Maples*, he prefers the *German Sycamore* much before ours; it's a quick grower, and where an old Tree is near any dug-up Ground, it will readily furniſh you with Plants enough to ſet in what places you pleaſe.

How rais'd. It is rais'd of the Keys as ſoon as ripe, which come up the firſt Spring, and being provided with a large Leaf, the Weeds will not ſoon choak them; alſo young ones may be got of Suckers from the Roots and by Layers; they are manag'd like other Nurſery Trees, and may, when they are big enough, be planted out for Walks or other occaſions.

How tranſplanted. They may be tranſplanted of any ſize, which they bear very well; and you may in tranſplanting of them, either head them, or only trim up the ſide Boughs, which way is to be preferr'd where they do not grow too ſmall and tall.

Soil. They delight moſt in a dry light Soil, in which they will thrive very much, tho' they will grow almoſt on any ſort of Land, and may be planted where other ſorts of better Trees will not proſper ſo well, but they are not eſteem'd ſo good for Walks or near fine Gardens, becauſe of the falling Leaf which is apt to foul them; and it is a Tree whoſe Leaves hang upon them the ſhorteſt time of any Tree, which makes them neither good nor ornamental for Walks; beſides which, there is a Honey-dew which hangs upon their Leaves, and breeds

Inſects; but both their Dew and Flowers are very advantageous for Bees; Mr. *Cook* commends them much for Parks and Underwood, becauſe the Deer are not apt to ſpoil them, and in that they make large Shoots from old Stubs.

Uſe. This Wood is of excellent Uſe for the Turner for Trenchers, Diſhes, *&c.* and alſo for Cart and Plough Timber, being light and tough, and not much inferior to Aſh it ſelf.

Chap. XV. *Of the Horn Beam.*

THE *Horn Beam* is but of one kind, and is much more valued in Foreign Parts than amongſt us, for its ſhade and the delicate verdure of its Leaves, being the fineſt and the pleaſanteſt green of any whatever, and a Tree whoſe Leaves hang the longeſt upon it, it being one of the forwardeſt in budding, and one of the laſt that falls, the old Leaves ſeldom dropping till the young ones ſhove them off.

How raiſed. They may be rais'd of Seeds, which are ripe in *Auguſt*, and ſhould be ſown in *October*. They will lie in the Ground till the next Spring come twelve Months after, and when they peep, ſhould be carefully ſhaded and weeded: But the beſt way of raiſing them is by Layers from another Plant, or by Sets which may be eaſily procured in Woods, and other places where they grow, they being apt to run up with Suckers from the Roots.

They delight moſt to grow on cold Hills, in ſtiff Clays, and in barren moiſt places in the Woods, there being few Soils that they refuſe, except it be thoſe that are very dry and burning; it being a Tree that grows beſt in the ſhade, and under the dropping of other Trees.

The common way of tranſplanting of them is like Quick, when they are about the bigneſs of your Finger, and to cut them off about two or three Inches above the Ground; but they may be planted, when they are about ten or twelve Years growth, for Standards like other Trees.

Uſe. The Timber is uſeful for Mill-coggs, and other things of that kind (for which purpoſe it excells all others,) and for Yoak Timber, Heads of Beetles, Handles for Tools, Stocks, Laſts, and for the Turner's uſe. It's very tough and white, and is good Firewood, for which uſe it is often cut. When the Boughs are too large, they commonly decay its Body, occaſioning in it often rottenneſs and hollowneſs. It is the quickeſt grower of any of the hard Woods, and preſerves it ſelf the beſt from the nipping of Deer; and upon that account is more common in Foreſts and Parks than other ſort of Wood, where the Soil is natural for it. It bears clipping the beſt of any Wood, and makes the thickeſt Hedges and covered Walks. It grows thickeſt and fulleſt of Boughs at the bottom, even to reſemble the thickneſs of Walls it ſelf; upon which account moſt of the fine Grottos in *Italy*, and the Walks and ſhady places of *Verſailles*, are of this ſort of Wood, which they keep about fifteen or twenty Foot high, cutting them with a Scythe faſtned to a ſtreight Handle, which diſpatches that Work much ſooner and eaſier than the Shears.

Chap. XVI. *Of the Lime Tree.*

THE *Lime-tree* or Linden, Mr. *Evelyn* reckons to be of two ſorts, *viz.* The broad leaved Lime which comes from *Flanders*, being a very quick growing Tree, and bears a very fine broad Leaf, only it is apt to ſhed too ſoon; and the wild kind, which, he ſays, grows naturally in many places of *England*, bearing a ſmaller Leaf than the other; by which, I ſuppoſe, he means the Tree which they call the Pry-tree, which grows the moſt plentifully in *Eſſex* of any part of *England* that I have ſeen; the Timber of which may be as good, if not better, than that of the right Lime, and the Bark is much us'd there to make Baſte-ropes; but for the propagating of it for Walks and ſuch uſes, I can no way commend it; firſt becauſe of its being of much ſlower growth than the *Flanders* Lime; and ſecondly, becauſe it's a Wood of that ill ſavour, that if you break a piece of it, you cannot well hold it to your Noſe: It yields an ugly ſtench in burning, which I mention, becauſe it is a good way of diſtinguiſhing the true Lime from it, that hath none of that ſcent.

How raiſed. They may both be rais'd by Seed, which doth not every Year ripen with us; but when they are ripe, you may know it by their being plump and full under the Husk, and the Body white when bit or cut in two; whereas if the Year be not kind for them, the Husk will be full of nothing but a chaffy ſubſtance, or have ſome ſmall lank Seeds in them. The Seeds are ripe in *October*, which gather in a dry day, and after you have laid them to dry about a Week in an open Room, put them into a bed of Sand indifferent moiſt, and ſo keep them till about the middle of *February*, ſowing of them under ſome Wall or other ſhelter, that may preſerve them from the North and North-weſt Winds; and if the Spring and Summer be dry, keep them indifferent moiſt, and ſtick ſome Boughs over them to ſhade them, keeping of them clean from Weeds, where let them ſtand two Summers, and then tranſplant them into your Nurſery, ordering of them as is directed for other Trees.

But the common way of raiſing of them is by Layers from a Mother-plant, or by laying of ſuch Suckers as come from the Roots. It being a Tree very apt to put forth Suckers, it's beſt to lay them betimes, as about *September* or *October*, and the next Year they will be fit to tranſplant into your Nurſery; it being a Tree that ſtrikes Root well, and is very eaſily rais'd by the ſame Methods that you are directed for ordering the Elm.

Soil.

They will grow almoſt in any Soil, but they delight moſt in a freſh, rich, dry Mould, and will grow well on a loamy Ground, that is rather ſtrong than light: But the firſt Year of planting, if the Spring is any thing dry, they ſhould be kept well water'd. It is a Tree will grow any where in Cities and Towns amongſt the Smoak of Houſes, which choaks other Trees, and therefore is a very proper Tree to plant, as the *Dutch* do for Walks in the middle of their Streets, and round the tops of their Walls; ſo that ſome of the Cities at a diſtance, ſeem rather Walks of Trees, than to be compos'd of Houſes.

How tranſplanted.

You may, if you have occaſion, tranſplant them very large, as about the bigneſs of your Leg, but when they are about two Inches Diameter and eight or ten Foot high is the beſt ſize; but if it never was tranſplanted before, it is better to remove it while ſmaller. It bears removing well, eſpecially if once or twice remov'd in the Nurſery before you plant it out into Walks or Hedge-rows.

It is a Tree that loves pruning, and heals the wound the ſooneſt of any, it naturally delighting to grow tall; and therefore if in your Nurſery it ſhoots much, leave ſome ſide-Boughs to check the Sap, leſt by forcing it too much up into the Head, it make the Head too large for the Body to bear it, which many times in high Winds is apt to break off the top; and therefore whenever you plant them for Walks or in Hedge-rows, a diſcreet thinning of the Boughs is neceſſary to let the Wind through; for being a large Leaf and a light Wood, the Wind is very apt to damage them. If you plant them for Walks, ſet them at about twenty or thirty Foot diſtance.

Uſe. It is a noble Tree for Walks and Avenues, caſting a large ſhade, and growing of a fine ſhape for that uſe, and is of a pleaſant green Colour. The Timber is fit for any uſe that the Willow is good for, and is much to be preferr'd both for its ſtrength and lightneſs, being of a fine white Colour, and works eaſily without being ſubject to ſplit, and is much uſed by Carvers for the Images they adorn Ships with; for which, if it is large, it ſells for as good a price as moſt other ſorts of Timber. It is alſo employ'd by Architects for Models for deſigned Building, and for ſmall Statues and Figures, and the Coal is eſteem'd for Gun-powder better than that of Alder it ſelf.

Chap. XVII. *Of the Quick Beam.*

THE *Quick Beam* or wild Sorb, by ſome called the *Iriſh* Aſh, is a ſpecies of wild Aſh, having both a Bark and Leaf much reſembling the Aſh, only the Leaf is jagged on the edges, and ſomething ſmaller and longer in proportion to its bigneſs; and inſtead of Keys bears red Berries, which are very ornamental to them, and are preceded by Bloſſoms of an agreeable ſcent.

How raiſed. They are beſt raiſed of the Berry, which is ripe in *October*, when it is the beſt time to ſow them. They muſt be cover'd but ſhallow, an Inch deep being deep enough to lay them. Whether they come up the firſt Year, or lie in the Ground like the Aſh till the next Spring after, I cannot yet learn.

Soil. They delight to grow on Hills, and in Woods, and in any dry Ground, and grow more commonly in the Northern than Southern parts of *England*, as upon the coldeſt, bleak and moſt expos'd of the Peak Hills in *Derbyſhire*, where they thrive without ſhelter upon dry ſtony Land, which makes me think them a very hardy Tree, and worth propagating.

I ſuppoſe in Tranſplanting of them, they may be order'd as the Aſh. Whether they will grow to the ſame ſtature, I cannot determine, becauſe I never ſaw any of them but on the barren Peak Hills. Mr. *Evelyn* ſays, they plant them every where in the Church-yards in *Wales*. *How tranſplanted.*

It is a very tough Wood, and all heart, being good for the Wheel-wright, and all ſorts of Husbandmen's Tools. If large, 'twill make good Plank-boards and Timber. Mr. *Evelyn* ſays, it is commended by our Fletchers for Bows, next unto Yew; that the Berries fermented by themſelves, if well preſerv'd, make an excellent Drink againſt the Spleen and Scurvy; and that Ale or Beer brew'd with them makes an incomparable Drink, which he ſays is much us'd in *Wales*. *Uſe.*

Chap. XVIII. *Of the Birch.*

THE *Birch* is a very common Tree, and needs no deſcription, being to be found almoſt in all parts of *England*.

It increaſeth commonly from the Roots and Suckers, tho' it bears Seeds which it ſheds in the Spring; but whether the Seeds will produce them, I have not yet heard of any that have made the trial. *How raiſed.*

It affects moſt a dry barren Soil, where hardly any thing elſe will grow, and will thrive on any ſort of Land, let it be wet, dry, ſandy, gravelly, rocky or boggy, and the barren heathy Lands that will hardly bear any Graſs. *Soil.*

The beſt way of tranſplanting of them, is to remove the Suckers that have Roots to them, which cut off about three or four Inches long, and plant as you do Quick, from which will come many Shoots, which you may let grow for underwood, *How tranſplanted.*

or reduce them to one Stem, which in a few Years will make it fit for the Turner.

Uſe. Birch, tho' it is the worſt of Timber, yet it is of uſe for many occaſions, as for Ox-yoaks, Hoops, Screws, Wythes for Faggots, Brooms, *&c.* and for Diſhes, Bowls, Ladles, and other Utenſils; eſpecially the Roots, of which, in *Ruſſia*, they make very fine Bowls and Diſhes that are very tough, and not ſubject to ſplit, covering their Houſes with the Bark, of which the *Indians* in the Northern Parts of *America*, as *F. Hennepen* ſays, make Canoes that are very ſwift and large; and of ſeveral other parts of the Tree, they make fine Baskets, Boxes, *&c.* It is good Fuel, and makes very good Charcoal; beſides the Wine made of the Sap, which I ſhall refer to another place.

Chap. XIX. *Of the Hazel.*

THE *Hazel* is of ſeveral kinds, and differs both as to the Leaf and Nut, even amongſt the wild kind, without reckoning the ſeveral ſorts of Filberts, and the large *Spaniſh* Nut, the Fruit of which laſt is much improv'd by Tranſplantation and Grafting.

How raiſed. The Hazel is beſt rais'd of Nuts, which you may ſow like Maſt in a pretty deep Furrow; the beſt time for the doing of which is in *February*, becauſe Vermin are very great devourers of them. They are very much prejudic'd by Froſt, till which is over they ſhould be kept moiſt in their own Leaves or in Sand, and not ſuffer'd to Mould. They may likewiſe be rais'd by Layers and Suckers from their own Roots, which they are apt to put forth in great plenty.

Soil. They will grow on any cold, dry, barren Soil, that is either ſandy, gravelly or chalky, and alſo on Mountains and Rocks, but they thrive beſt on moiſt Bottoms, ſides of Hills and Banks; and the Filbert loves a rich black Mould.

They are commonly tranſplanted ſmall, being ſeldom remov'd, but to fill up or thicken Woods with, or for Hedges, being cut like Quick-ſet, about ſix or ſeven Inches long. *How tranſplanted.*

The uſe of the Hazel is for Hoops, Poles, Spars, Rake handles, Angle-rods, Fuel-bands, Hurdles; and Mr. *Evelyn* ſays, that the Chips of it are the beſt Wood of any to fine Wine with. *Uſe.*

Chap. XX. *Of the Poplar, Aſpen and Abell.*

THESE three ſorts of Trees are much of a kind; only the *Poplar* is eſteem'd of three ſorts; the white Poplar which is the moſt common amongſt us; and the water Poplar, the Leaf of which is of a pale green Colour, ſhap'd ſomething like the other, but is not ſo white underneath; and the black Poplar.

The *Aſpen* or Aſp-tree hath Leaves much the ſame with the Poplar, only much ſmaller, and not ſo white.

The *Abell* is a kind of white Poplar, only much finer, bears a larger Leaf, makes a much ſtronger Shoot, and is a much quicker grower; the beſt ſort of which comes from *Holland* and *Flanders.*

They may be rais'd by Layers or Suckers taken from the Roots, which they are very apt to put forth; eſpecially if any way lopped or cut down, often to the prejudice of the Land they grow in, eſpecially if it is any thing good; ſo that a ſmall Place incloſ'd where they grow, will furniſh you with Sets enough, tho' I think thoſe rais'd by Layers from a Mother-plant make the beſt Trees. *How raiſed.*

They will grow on any ſort of Land, wet or dry, but thrive beſt on a rich moiſt Soil, eſpecially *Soil.*

cially the water Poplar. It is eſteem'd one of the quickeſt growing Trees that is; eſpecially the *Abell*, which is one of the beſt Trees to plant where you deſire a ſpeedy Shelter and Walks, they many times making Shoots of eighteen or twenty Foot long in a Year, and any ſort of Trees or Shrubs will thrive under their ſhade.

Tranſplantation It is a Tree that bears Tranſplantation well; and may be planted out ſmall like Quick, cutting of them two or three Inches above the Ground, which you muſt keep clean weeded, and you may prune up the moſt thriving Shoots for two or three Years. It will make a fair Standard; or you may tranſplant them when pretty large, cutting off their Heads, which they will quickly recover, and ſet them at ten or twenty Foot diſtance, but it is a Tree that doth not grow to any very great Age.

Uſe. The Timber is very good for all ſorts of white wooden Veſſels, as Trays, Bowls, and other Turners Ware, Bellows-makers, Ship-pumps, Wooden-heels, Laſts, Carts, Hop-poles, *&c.* and makes good Timber for Building where it lies dry, and very good Boards, and is ſerviceable for Fuel; great quantities of it being rais'd in places where Wood is ſcarce; for the lopping the Boughs of which the beſt time is *January*.

Chap. XXI. *Of the Alder.*

THE *Alder* is reckon'd chiefly to be of two kinds; the common ſort which only affects moiſt Ground, and the blacker ſort which thrives better on drier Lands.

How rais'd. The Alder is propagated by Truncheons, and, ſome ſay, may be rais'd by Seeds; but large Roots or ſmall Suckers, which they put forth very plentifully, are the beſt to raiſe them of.

They delight moſt in the moiſteſt boggy places, where nothing elſe will grow, and are a great Improvement of ſuch Lands, and will grow on the ſides of Rivers and Springs. *Soil.*

How tranſplanted. The beſt way of removing them, is to tranſplant the Suckers, which trim up to one Branch; and after they have ſtruck Root, you may cut them within three or four Inches of the Ground, which will cauſe them to ſpring in Clumps and to increaſe their Roots and Suckers, or you may tranſplant the Roots which will ſpring into Branches; and if you raiſe them of Truncheons, ſteep one end of them in Water ſome time before you plant them, making of holes for them, and not forcing them into the Ground to ſtrip up their Bark; the beſt time of doing which is in *February*: And as they are to be planted in moiſt places or near Springs, it will be good to plant them deep, that the Streams may not waſh away the Roots, and to preſerve them ſteady from the violence of the Winds. If you have occaſion to cut or prune them, let it be done in *February*, which is the beſt time for all Aquaticks or ſoft Woods, becauſe they will be the leſs time expos'd to the wet of the Winter.

Uſe. It is excellent Timber for Water-works where it may conſtantly lie cover'd. It will grow as hard as a Stone. The Coal is good for Gun-powder, and the Wood for Piles, Pumps, Hop-poles, Water-pipes, Troughs of Sluices, Wheels, *&c.* and is in much requeſt with the Turner. The Bark is much ſought after by the Dyer, and ſome Tanners, and mix'd with the Fruit, or macerated in Water with a little ruſty Iron, it makes a black Dye, and may be us'd for Ink. Faggots made of it, thrown upon Flints, Brick-bats and other Rubbiſh that is laid in Drains, and Earth thrown on them, will laſt a great many Ages.

Chap. XXII. *Of the Withy, Sallow, Ozier and Willow.*

EACH of which kinds (there being ſeveral ſorts) I ſhall not particularize, becauſe they may be all propagated the ſame way, and delight in the ſame Soil, eſpecially the Withy, Sallow and Willow.

How raiſed. They may be rais'd of Cuttings ſtuck in the Ground, or large Truncheons of eight or ten Foot long, where they are in danger of Cattel coming at them, becauſe they will by their heighth be the better ſecur'd from them, by putting of Buſhes or other Fences about them ; only you muſt obſerve when they put their Buds out firſt, to rub off all the Under-buds, leaving only a few near the top to draw up the Sap.

They may likewiſe be rais'd of Layers, by which means, you may thicken your Woods, and have Plants to ſet out, which if rooted, are much better to plant on dry Ground than Sets. They may be rais'd of Seeds ; but as they ſeldom come to be ripe in *England*, and the other ways of raiſing them being eaſie, it will be but a needleſs Experiment to endeavour the propagating of them that way.

Soil. All the ſeveral ſorts delight in a moiſt Soil, as I ſaid before ; but the Withy and Sallow will grow on the drieſt Land, and the Willow in Banks near Rivers and moiſt Ditches, where they can reach the moiſture with any of their Roots ; but the Ozier will grow the beſt on the moiſteſt Lands, eſpecially ſuch as are overflow'd with the high Tides, and left dry at the Ebb.

The beſt time to tranſplant them and to lop them, is in *February*, juſt before the Sap begins to riſe, eſpecially if you deſign the raiſing of them by Cuttings or Truncheons, thoſe Cuttings being eſteem'd the beſt which grow neareſt the

Roots. In many Places where Wood is ſcarce, they make great advantage of them by planting them in the Quincunx Order at ten Foot diſtance; tho' I think fifteen or twenty Foot a better diſtance; but a fat rich Soil requires their being planted at greater diſtances than a more barren Soil doth.

It is a good Wood for fire, if kept dry, and is very uſeful for Stakes in Hedges, to prevent Hedge-breakers pulling of them up, and likewiſe to thicken your Hedges; it is alſo good for Rake and Scythe-handles, Heels, Clogs, Pattens, Hurdles, Sieves, Lattices, and for ſeveral Uſes of the Turner, *&c.* and the Oziers for Baskets, Panniers, and ſeveral other Utenſils, which makes the Ozier Ground of very great Value, even beyond that of Wheat; many Ozier Grounds being Let for ten Pounds *per* Acre, which conſidering their conſtant Crop, the ſmall charge that attends them, and the little pains that is taken to renew any of the old Plants when they decay, which is done by only cutting off a piece of Ozier and ſticking of it in the Ground, makes it one of the greateſt Improvements that is of moiſt Lands. *Uſe.*

Chap. XXIII. *Of the Fir, Pine, &c.*

FIRS are of ſeveral ſorts, as the *Norway*, *Spruce*, *Dram*, *Scotch*; but the beſt ſort both for Beauty and Timber, is that which they call the Silver-Fir, becauſe the under-ſide of the Leaf is of a white Colour, and the Leaf is longer than any of the former; except the *Scotch* Fir, which, whether they may not rather be eſteem'd a Pine than a Fir is diſputable. The Silver-Fir being, I ſuppoſe, the ſame as Mr. *Evelyn* calls the *Spaniſh* Fir; it grows to the greateſt highth of any of the ſorts of Firs which we have in *England*, and is of great value for Maſts of Ships.

How raiſed. The common way of raiſing the ſeveral ſorts of Firs, is of Seeds; the beſt way to get which out of the Cone or Clogs, is to lay them in the Sun, which will quickly occaſion them to open; or in Water a little warm, which you muſt take care to gather before they open, which they commonly do in *April* or *May*, when the Weather begins to be hot, it being the ſecond Year before they are ripe; they may likewiſe be rais'd by Slips or Layers interr'd about the latter end of *Auguſt*, and kept moiſt. The Silver-Fir, the Gard'ners tell you, is to be rais'd no other way than by Seed, tho' I am of another Opinion in that I could never produce them that way, and I am rather inclin'd to think them produc'd of Layers; but this is a Secret I could never yet diſcover. As to the Seeds, do not take them out of the Cone or Clog till you uſe them, in which they will keep good two or three Years. The beſt time to ſow them is in *April* or *May*; they ſhould be very carefully kept from the Mice before they get up, who are very deſirous of them; and when they begin to peep, ſhelter them with Furz, or ſuch ſort of Fence, from the Birds, who are very apt to pull them up by taking hold of the Cap, which they commonly bear upon their tops when they firſt ſpring. The Beds wherein you ſow them, had need be ſheltred from Southern Aſpects. Sow them in ſhallow Rills, not above half an Inch deep, and cover them with light Mould. They will peep in about five or ſix Weeks time, and being riſen two Inches high, eſtabliſh their weak Stalks by ſifting of ſome more Earth about them; for being heavy they are apt to ſwag ſo as often to blow out of the Ground. When they are of two or three Years growth, you may tranſplant them where you pleaſe; and when they have gotten good

Root they will make very large Shoots, but not for the firſt three or four Years.

Soil. They will grow on any dry Soil, eſpecially the light hazelly Brick-earth, and refuſe not moiſt barren Gravel, or any ſort of poor or rocky Grounds or Clays, except they are too moiſt and ſpue, eſpecially the *Scotch* Fir, which delights in a moiſt Soil, and grows, as I am told, very well in the boggy part of *Ireland.*

How raiſed. The beſt time to tranſplant them, is from the middle to the latter end of *Auguſt* and *March.* Remove them with as much Earth about the Roots as you can, tho' the Fir will bear a naked Tranſplantation better than the Pine. You may tranſplant them from the place where they are rais'd of Seeds; but if you deſign to plant them where the Cattle come, you muſt firſt remove them into a Nurſery, where you may let them ſtand till they are eight or ten Foot high, and then plant them out, obſerving to water them well, and neither to bruiſe nor cut the tops; and when you prune them, leave the Stories about a Yard aſunder; the beſt time of doing of which, is in the beginning of *March*, and be careful to rub a little dry Earth upon the Wound where you cut them, to ſtop the Turpentine, and to prevent their ſpending of themſelves too much, which theſe Trees are very ſubject to do; and it will cauſe them to grow taper, to ſhoot in heighth, and to let the Wind thro' them, which may prevent their being blown down, and the breaking of their Boughs, which theſe Trees are very liable to during the Winter Guſts; and therefore, where you plant any of them, I ſhould adviſe the planting of other Trees round them to ſhelter them, but be ſure, on whate'er Soil you plant them, to let no Dung touch either their Body or Root; and if you plant them on Gravel-ground, Mud or Clay mix'd with it will do well to temper it, and if you mix Sand with Clay where the Soil is Clay, it will be better than Dung; but the ſheltring of them with ſome Litter will do well to preſerve them from the parching heat in Summer, and the cold in Winter.

There are ſeveral ſorts of Pines, but amongſt us not above three or four ſorts; but as they are to be rais'd of Seeds, and order'd the ſame way, and delight in the ſame ſort of Soil as the Fir, I ſhall refer you to the Directions of the Fir-tree for the ordering of them.

How tranſplanted. They do not bear Tranſplantation ſo well as the Fir when large, and ſhould be always removed with as much Earth as you can, and both Firs and Pines ſhould be well water'd at firſt removal, and planted as ſhallow as their Roots will allow of.

There is likewiſe the *Piceaſter* (a wilder ſort of Pine,) out of which the Pitch is boil'd, which grows both in the cold and hot Countries; the Body of which being cut or burnt down, Mr. *Evelyn* ſays, will emit Suckers from the Roots, which neither the Fir nor Pine will do.

Uſe. I need not ſay any thing of the Uſe of theſe Trees for Building, Maſts, *&c.* it being ſo well known to moſt that have any occaſion.

Chap. XXIV. *Of the Larch, Platanus, Lotus and Cornel Trees.*

THE *Larch* or *Larix* Tree, Mr. *Evelyn* ſays, may be rais'd of Seed, and that it will grow in *England*, which he commends much for the largeneſs, durableneſs and uſefulneſs of its Timber, and gives you an account of ſeveral Buildings in *Italy* made with it, which he ſays no Worm will touch nor hardly any fire burn.

The *Platanus* is a very beautiful Tree, and grows very well in *England*. It may be had at moſt of the Gardeners near *London.* It's rais'd by Seeds or Layers. It affects a moiſt Soil, and ſhould be well water'd when tranſplanted. It is a fine Tree for Walks, and 'tis pity it's not more propagated.

The *Lotus* is a Tree frequent in *Italy*, that affords a fine ſhade, and very durable Timber. It affects a moiſt Soil, and the Roots of it are very fine for Hafts of Knives, and other Tools; and of the Wood are made Pipes and Wind Inſtruments.

The *Cornel* is a very durable Wood; and, as Mr. *Evelyn* ſays, is uſeful for Wheel-work, Pins, Wedges, *&c.* and will grow to a good ſtature with us. Its Berries are commonly very much uſed for Preſerving and Pickling.

Chap. XXV. *Of the Cypreſs-Tree.*

THE *Cypreſs* is of two ſorts; the Sative or Garden-tree, which grows in the beſt form, and is the moſt beautiful; or that which is call'd the Male, which bears Cones, and is of a more irregular ſhape. This Tree is commonly much prejudic'd by the ſtaking and binding it up to a pyramidical Form, which heats the inward Branches for want of Air, and occaſions their Moulding, hindring of their growth, and is very troubleſome and chargeable; whereas with clipping only, they may be brought to a much finer ſhape, and not be ſo liable to prejudice from their bandage, nor from the Froſt. They alſo make fine Hedges when kept clipt, branching from the very Roots; the beſt time of doing which is in *April* and *Auguſt.* If they run too much without branching from the bottom, a diſcreet cutting of the principal Stem may be of advantage to make them ſhew beautiful, but a good Management of them while young may prevent that occaſion.

They

How rais'd. They are rais'd of the Seed. Procure them in the Nuts, and when you have occaſion to uſe them, expoſe them to the Sun, or put them in warm Water, and the Seeds may be eaſily ſhaken out. The time to ſow them is in *April*, which do after this manner: Prepare a Bed of fine Earth, and make it even, upon which ſtrew the Seeds pretty thick, and ſift more Mould upon them about half an Inch thick, keeping of them well water'd every Evening, except when the Seaſon waters them, and after a Years growth you may tranſplant them: When they are come up well, be ſparing of your watering of them.

Soil. They will grow on any dry Ground, even Gravel and Sand, eſpecially the Male ſort, and will never be injur'd by Froſt if they are not planted in a cold moiſt Soil.

Vſe. The Timber is very laſting, and never cleaves but with great violence. The bitterneſs of its Juice preſerves it from Worms and Putrefaction. It is the beſt of all Timber for Building, and will laſt when either wet or dry.

Chap. XXVI. *Of the Cedar.*

IT is a great pity the *Cedar* is not more propagated among us, being ſo eaſily rais'd, and a Tree that will grow ſo well with us. They are of ſeveral ſorts and kinds, ſome of which do very much reſemble the *Juniper*, which I cannot but think a Species of it, and therefore it might do well to be better encourag'd where the Soil is proper for it, to ſee what magnitude it will grow to. Other ſorts of it are more like Cypreſs, as (according to the *London* Gardeners Opinion,) thoſe kinds growing in *New-England* and *Virginia* are: But the Cedar of *Lebanon* bears the ſevereſt Weather we have. I have rais'd ſeveral of them of Cones I had from thence, and have now a Walk planted with them; and whereſoever they are to be had of any ſort, the Seeds may be brought from the furtheſt part of the World in the Cones, for I had ſome two Years old that grew as well as thoſe that were brought me directly from *Mount Lebanus*; and I am apt to believe, if they are kept in the Cones, and not taken out till juſt you ſow them, they may be kept three or four Years without prejudice.

How rais'd.

They are rais'd of Seeds which ſeldom fail of growing if order'd right, and if care be taken to preſerve them from the Mice, who are very greedy of them.

They bear a Cone as the Pines do, but it is rounder and more like Scales; the ſame Obſervations are to be minded in the gathering of them, as that of the Pine; only to open them, let them be ſteep'd in cold water forty eight Hours, and the Seeds ſet as ſoon as taken out. The time of the ſetting of them is about the latter end of *March*, which ſow on a Bed of good rich Mould, and lay it at leaſt two Foot deep, but let no Dung come near them; and if your Bed be made a little ſloping, it will do well, that the water may run off from them, for too much wet is apt to burſt the Seed. They cannot well ſtand too dry, if they are but ſhaded in dry Weather. As they come up, ſift Earth about them to eſtabliſh their Roots, as is before directed about the Pine.

Soil.

They delight moſt in a rich dry Soil, but they grow very well with me in *Eſſex*, both on the hazelly Brick-earths and on Gravel, that hath ſomething of good Mould about a Foot deep on the Surface of it.

How tranſplanted.

The beſt time of tranſplanting of them is at three or four Years old from the place where you rais'd them of the Seed. If the firſt Year you water them with a Liſt, it may do well, and be of great advantage to them. Whether they may be removed at a larger growth, I have not experienc'd, and ſo can ſay nothing of it. They grow but ſlowly the firſt ſeven or eight Years; but I am told that after that, they grow with as much ſpeed as moſt other ſorts of Trees do.

Uſe. I need not ſay much of the Uſefulneſs of the Timber, being ſo much known. The fragrancy of which, its fine Grain for all ſorts of Work, and its durableneſs being able to recommend it for all Uſes, beſides the ſtatelineſs of it for Walks and Avenues, ſeveral of them being reported to be two hundred Foot or more in heighth. A Friend of mine aſſur'd me that he cut down one in *Barbadoes*, that had above four hundred Foot of Timber in it; but I am told there are ſome of a far greater magnitude.

Chap. XXVII. *Of the Cork, Ilex, &c.*

THE *Cork-Tree*, with us, is of two ſorts (and there are divers other Species in the *Indies*) one of which is of a narrower leſs jagg'd Leaf than the other, being a conſtant green, whereas the other is broader and falls in the Winter, it grows near the *Pyrenæan* Hills, and in ſeveral parts of *Italy* and the North of *New England*, eſpecially the latter ſort, which is the hardieſt and beſt for our Climate; and that upon the worſt of Soils, as dry Heaths, ſtony and rocky Mountains, where there is hardly Earth enough to cover the Roots. They may be had of the Gardeners at *London*, but with what ſucceſs I cannot tell.

This Tree hath three Barks, on the outer of which is the Cork, which they ſtrip once in two or three Years in a dry Seaſon, becauſe the wet is apt to prejudice the Tree; and one of the other Coats being red, when they fell the Tree, bears a good price with the Tanner. The Wood is good for Fire, and uſeful for building Palliſado Work, *&c.*

The *Ilex*, or great ſcarlet Oak, thrives well in *England.* They are a hardy ſort of Tree, and eaſily rais'd of the Acorn. If we could have them brought to us well put up in Earth or Sand, they might be brought any where from Foreign Parts. The *Spaniards*, Mr. *Evelyn* ſays, have a ſort they call *Enzina*, which bears Acorns, of which they have profitable Woods and Plantrtions: The Wood of which, when old, is finely chambletted as if it were painted; which Wood is uſeful for Stocks of Tools, Mallet-heads, Chairs, Axle-trees, Wedges, Beetles, Pins and Palliſadoes for Fortifications, being very hard and durable. Of the Berries of the firſt ſort is extracted the Painters Lac, and the Confection of Alkermes. Their Acorns are good Food, little inferiour to Cheſnuts: But the *Kenne* Tree doth not always produce the *Cocum*, except it grow near the Sea, and where it is very hot, and therefore they frequently cut down the old Trees that they may put forth freſh Branches, upon which they find them. *Ilex.*

Thuya, or *Arbor vitæ*, grows of Layers or Slips to a tall ſtraight goodly Tree, hardy in all Seaſons. The Wood makes incomparable Boxes, Bowls, Cups, and other Curioſities; and the Leaf makes one of the beſt Ointments for green Wounds that is, cloſing of them ſuddenly.

Box deſerves our Care becauſe of the excellency of its Wood, and in that it will proſper on the declivity of cold, dry, barren Chalky-hills, where nothing elſe will grow; of which there are two ſorts, the dwarf Box, and a taller ſort that grows to a conſiderable heighth. It will increaſe of Slips ſet in *March* or about *Bartholomew-tide*, and may be raiſed of Layers or Suckers. *Box.*

It is of uſe for the Turner, Ingraver, Carver, Mathematical Inſtrument-maker, Comb-maker, *&c.* for which they give great Prices by Weight as well as Meaſure, eſpecially the Roots (as even of our neglected Thorn) which is of great value for inlaying and Cups.

Yew. *Yew*: Since the uſe of Bows is laid aſide, the Propagation of this Tree hath been neglected, tho' it will grow on our coldeſt and barreneſt Hills, eſpecially if chalky, where it may be of uſe to propagate it for the ſame uſes as Box, for moſt of which Purpoſes it is as good, beſides which it makes extraordinary Axle-trees.

It is eaſily produc'd of the Seeds, which muſt be waſh'd and cleans'd of their Mucilage, and then buried in Sand made a little moiſt any time in *December*, and ſo kept in ſome Veſſel in the Houſe all Winter, and in ſome ſhady cool place abroad in Summer. The Spring come twelve Months after you have put them in Sand, ſow them on a Bed, the Ground not too ſtiff. Some bury them in the Ground like Haws. It is commonly the ſecond Winter before they peep, and then they riſe with their Caps on their Heads. At three Years old tranſplant them. They may likewiſe be rais'd by Layers or Slips, and ſo planted out for Standards, Walks and Hedges, being to be clipp'd in what form and order you pleaſe, and therefore are much valu'd by our modern Planters, to adorn their Walks and Graſs-plats.

Juniper is of three ſorts, whereof one is much taller than the other, the Wood whereof is yellow, and if cut in *March* is ſweet like Cedar; of which this is accounted a ſpurious kind. They ſhould neither be ſhaded much nor dropt upon. They may be rais'd of Seeds, which will peep in two Months after ſowing. They ſhould neither be water'd nor dung'd; and being manag'd like Cypreſs will make fine Standards; eſpecially where they are not obnoxious to eddy cold eaſterly Winds, which are apt to diſcolour them, but they ſoon recover it again. To make it grow tall, prune it cloſe to the Stem, and looſening the Earth about the Roots, haſtens its growth much. It may be clipt for Hedges. It loves a gravelly Soil, and cannot be rais'd but of Seed.

Chap. XXVIII. *The Laurel.*

THE *Laurel* or Cherry-bay is moſt commonly us'd only for Hedges, but being planted upright and kept for Standards by cutting away the ſide Branches, ſo as to maintain only the principal Stem, it will riſe to a large Tree, and carries a fine ſpreading Head, that is very ornamental and ſhady for Walks or Groves, and may this way be of much better uſe than to plant them in Hedges, as moſt do, where the lower Branches growing ſticky and dry, by reaſon of their frequent and unſeaſonable Cuttings (the Genius of this Tree being to ſpend much in Wood) cauſes them never to ſucceed after the firſt ſix or ſeven Years, but are to be new planted again, or abated to the Roots for a freſh Shoot.

They are rais'd of the Seeds or Berries with extraordinary facility, or propagated by Layers, Slips and Cuttings ſet about the latter end of *Auguſt*, or earlier at St. *James*'s-*tide* in a ſhady moiſt place, they delighting moſt in a moiſt cool Soil.

BOOK XII.

Chap. I. *Of Coppices.*

AS for Coppices or Underwood, I have already ſhew'd how each particular ſort of Tree is to be rais'd both by ſowing and planting, and for the raiſing of Coppices, great care ought to be taken that the Wood they are to be compos'd of, be ſuch as is proper for the Soil you raiſe them on, and that the ſort of Wood is proper for ſuch Uſes as you deſign to ſell your Wood for, which you muſt be regulated in by the vent you have, as whether it is for Fire-wood, for which the Oak, Horn-Beam, and other hard Wood is beſt; or for Hoops, Hop-poles, *&c.* for which the Aſh, Cheſsnut, Oak, Hazel, *&c.* is the moſt uſeful, as I have already ſhew'd; and according to the Profit of your under-wood, regulate the thickneſs of your Standards, which as they are thicker or thinner, do more or leſs Injury to your Under-wood. You are likewiſe to conſider at what Growth you can ſell your Under-wood, only remember that the older and taller your Under-wood is, the better it is for Fire-wood, and the better it is for what Standards you leave, becauſe they will be the taller and ſtraighter by being forc'd up by the Wood that grows about them; tho' a deep Soil, as I obſerv'd before, contributes much to their ſpiring, and according to the time of your felling, it is neceſſary to lay out your ſeveral Falls, that ſo you may have an annual Succeſſion to yield a yearly Profit, which in many Places is from eight Years to twenty or thirty: But tho' the ſeldom felling of Wood yields the more and the better Timber, yet the frequent cutting of Under-wood makes it the thicker, and gives room for the Seedlings to come up. If many Timber Trees grow in the Coppice which are to be cut down, fell both them and the Under-wood together, cutting off the Stubs as near the Ground as may be, and the Stubs of the Under-wood aſloap and ſmooth, and not above half a Foot from the Ground, and ſtock up the Roots of the Timber Trees, if they ſend forth no Shoots, (which they are not apt to do if ſawn down, which is the beſt way of felling of Timber Trees) to make way for Seedlings and young Roots to ſhoot; but where you deſign to ſow Seeds, you muſt prepare your Ground with good Tillage, as much as you do for the ſowing of Barley; and about *February* ſow them, and if the Soil be ſhallow, plow your Ground into great Ridges, and it will make the Soil lie the thicker on the top of each Ridge, by which means the Roots will have the more depth to ſearch for Nouriſhment, and the Furrows will in a little time be fill'd up by Leaves, which when rotten, will lead the Roots from one Ridge to another; and if you ſow them on the ſides of Hills that are dry, plow your Ridges croſs the deſcent of the Hills, that the Water may be kept on the Land without having too ſudden a deſcent; and if your Ground be very wet, obſerve juſt the contrary. Some ſow their Seeds with a Crop of Corn; but as the Seaſon for the ſowing of Corn is too late for the Seeds, it is better to ſow them by themſelves, and be ſure to keep them well weeded the firſt and ſecond Years. But if you have a mind to raiſe Wood on very barren dry Land, ſow it with what Fruit or Seeds you deſign it for, and with them ſow Furz or ſuch Trumpery, as will grow on the worſt Land, and it will become a ſhelter to your Trees, which when they have once taken Root, will ſoon out-grow the Furz, and kill it with their dropping. For the raiſing of Coppices, the neareſt diſtance for the Plantations ought to be about five Foot for the Under-wood ; but as to what number and ſcantlings of Timber, you are to leave on each Acre, the Statutes direct, and it is an ordinary Coppice which will not afford three or four Firſts, that is, Beſts, fourteen Seconds, twelve Thirds, and eight Wavers, *&c.* according to which Proportion the ſizes of young Trees in Coppices are to ſucceed one another. By the Statute of the 35th of *Henry* the VIII. in Coppice or Underwood fell'd at twenty four Years growth, there were to be left twelve Standlings or Store Oaks upon each Acre; and in defect of ſo many Oaks, the ſame number of Elms, Aſh, Aſp or Beach, and they to be ſuch as are likely Trees for Timber which are to be left, and ſo to continue without felling, till they are ten Inches ſquare within a Yard of the Ground. In Coppices above this growth when fell'd are to be left twelve great Oaks, or in defect of them, other Timber Trees as above, and ſo to be left for twenty Years longer, and to be enclos'd ſeven Years.

However, I think it better to leave a much greater number of Timber Trees, eſpecially where Under-wood is cheap, and as to the felling, begin at one ſide, that the Carts may enter without detriment to what you leave ſtanding; where your Woods are large, it is beſt to have a Cart-way along the middle of them, by which means you may fell on each ſide where you will, and have a Cart-way always ready without prejudice to the reſt of the Wood. The Underwood may be cut from the beginning of *October* to the latter end of *February*, but *February* is the beſt Month to cut Wood in, where you have but a ſmall quantity to fell, that you may do it before the Spring comes on too much : Take great care to prevent the Carters bruſhing againſt the young Standards, and let all your Wood be carried out by Midſummer, and made up by the end of *April* at the lateſt; for where the rows and bruſh lie longer unbound or unmade up, you ſpoil many of the Shoots and Seedlings. If the Winter before you fell, you incloſe it well, ſo as to keep all Cattle out of it, it will recompence your care and trouble.

By the Statute Men were bound to incloſe Coppice-Wood after felling, if under fourteen Years growth, for four Years; thoſe above fourteen Years growth to be ſix Years inclos'd; and for Woods in common, a fourth part to be ſhut up, and at felling the like Proportion of great Trees to be left, and ſeven Years inclos'd; this was inlarg'd by the 13th of *Elizabeth.* Your elder Under-wood may be graz'd about *July*, or in Winter; but for a general Rule, newly wean'd Calves are the leaſt prejudicial to new cut Wood where there is an abundance of Graſs, and ſome ſay Colts of a Year old, but then they muſt be drove out at *May* at fartheſt; but if nothing at all be ſuffer'd to come in, it is better, every Man's Experience being able to direct him.

If your Woods happen to be cropt by Cattle, it is beſt to cut them up, and they will make freſh Shoots; whereas what is bit by the Cattle will ſtunt for ſeveral Years before it will take to its growth.

If your Woods are too thin, lay down Layers of the longeſt and ſmalleſt Shoots you can find of ſuch kinds of Wood as you like beſt to have your Coppice of, or that is neareſt to the bare place where you want a ſupply, according to the Method already propos'd for the laying of Layers of Trees, and they will ſend forth abundance of Suckers, and thicken and furniſh a Coppice very ſpeedily.

As to the ſize of Faggots and Wood Stacks, *&c.* it differs in moſt Countries, and therefore you muſt in all thoſe things be guided by the cuſtom of the Country where you live; the prices of which, and the ſtacking up of Wood, Roots, Stumps of Timber Trees, *&c.* I ſhall give you an account of hereafter, when I come to conſider the Prices of the Husbandman's Labour and Charges. I ſhall at preſent only Note one thing, and that is, that when the Workmen have bound up the Faggots, with their Bills they trim off all the ſtraggling ſmall Branches to make the Faggots more neat and tight, which Trimmings they commonly gather up and put into the middle of the next Faggot, where it is of little Advantage, but would be of much greater Profit to the Land, if it were left to rot in the Wood, for which it is as good as Dung, and would much advance the growth of your Trees, as I have known by experience; for tho' the Leaves falling and rotting in Woods do much improve them, yet it is not to be compar'd with the Advantage that they receive from rotten Wood, which will turn any Soil whatſoever into a rich black Garden Mould, as may be found by Experience by any that will make Obſervation of it where Wood-ſtacks have ſtood; and tho' thoſe Sticks are but ſmall, and cannot do much the firſt time, yet a conſtant Repetition of it every Fall is a much greater Improvement of Wood than can eaſily be believ'd.

The beſt time to fell Timber is in *January* or *February*, becauſe the Sap is then all down in the Root, but the Oak they commonly fell about *April* or *May* when the Bark will run, which they are oblig'd to do by the Statute, becauſe of the Bark for the Tanner, which is a very great prejudice to the Timber: But the Opinion and Practice of Men have been very different concerning the beſt time to fell Timber. *Vitruvius* is for an

Autumnal Fall; *Cato* was of Opinion, that Trees ſhould not be fell'd till their Fruit was ripe, and tho' Timber unbark'd be obnoxious to the Worm, yet we find the wild Oak and many other ſorts of Trees fell'd late (when the Sap begins to be proud) to be very ſubject to the Worm too; whereas being cut about Mid-winter, it neither caſts Rifts nor Winds, becauſe the cold of the Winter both drys and conſolidates it.

Some Authors adviſe in felling of Timber to cut it but into the Pith, and ſo let it ſtand till it be dry, becauſe, ſay they, by drops there will paſs away that moiſture which would cauſe Putrefaction; others adviſe, to bore a hole in it with an Auger for the ſame Purpoſe, but I ſuppoſe a nipping Froſt will effect the ſame, by cauſing the moiſture to deſcend into the Root, not that I would have them fell'd in froſty Weather, but not fell'd till a hard Froſt hath been upon them.

When the Stubs of your Under-wood are great, ſtock them up, this is a good piece of Husbandry, becauſe it makes way for Seedlings and young Roots that are thriving, whereas when the Stumps are old and large, they are apt to let in the Water and be unthrifty; the time of doing which is in the Winter Seaſon.

When you fell your Woods, leave young Trees enough, you may take down the worſt at the next Fall, eſpecially if any grow near a great Tree, that you think may be fit to fell the next Seaſon, to ſupply its place, becauſe ſeveral may be ſpoil'd by its fall.

When Trees are at their full growth, there are ſeveral ſigns of their decay, as the withering or dying of any of the top Branches; or if they take any Water in at any Knot; or are any ways hollow or diſcolour'd; if they make but ſmall Shoots; if Wood-peckers make any holes in them; alſo a very ſpreading Tree in a Wood, is many times very prejudicial, becauſe of the young Trees it drops upon, according to the Directions of the Poet,

To fell thoſe Trees can be no loſs at all,
Whoſe Age and Sickneſs would your Ax foreſtall;
A youthful Succeſſor with much better Grace,
And Plenty will ſupply the vacant Place.

Laſtly note, That if you ſell your Wood by the Acre, you muſt take great care before-hand to make out what Standards ſhall be left, or elſe the Wood-Buyers will be very apt to deceive you; and obſerve that all Wood-Lands are meaſur'd by the eighteen Foot Pole.

Chap. II. *Of Tranſplanting of Trees.*

THE ſmalleſt Trees, and thoſe that have been tranſplanted in Nurſeries, *&c.* are the beſt to remove, as I have already obſerv'd; but as the removing of Trees is commonly upon the account of the making of Walks, Avenues, Groves, or to fill up Hedge-rows where Cattle come, it's neceſſary that they ſhould be of a ſize ſo big, as with ſome ſhelter they may be out of danger of being ſpoil'd by Cattel; for which purpoſe, I reckon Trees that are of about five or ſix Inches in Circumference, and ſix Foot and a half or ſeven Foot high, to be the beſt, and the beſt ſize both upon account of the Trees and of the Cattles reaching to crop them. In caſes of neceſſity, Trees of very great Stature have, according to the account given by Mr. *Evelyn*, been remov'd upon particular Occaſions; the way of doing of which, tho' it is too troubleſome for ordinary planting, yet as it may be of uſe upon ſome Occaſions, I ſhall propoſe it according to the Method he has laid down, which is, To chuſe a Tree as big as your Thigh, remove the Earth from about it, cut thro' all the ſide Roots till you can with a competent ſtrength enforce him down on one ſide, ſo as to come with your Ax at the Tap-root, which cut off, and redreſſing your Tree, let it ſtand cover'd with the Mould you looſen'd from it, till the next Year or longer, if you think fit, take it up at a fit Seaſon, and it will have drawn new tender Roots fit for Tranſplantation.

Or elſe a little before the hardeſt Froſt ſurprize you, you may make a Trench about the Trees at ſuch diſtance from the Stem, as you judge ſufficient for the Root, which dig of a competent depth ſo as almoſt to undermine it by placing of Blocks and Quarters of Wood to ſuſtain the Earth ; this done, caſt in as much Water as may fill the Trench, or at leaſt ſufficiently wet it, unleſs the Ground were very wet before ; let it ſtand till ſome very hard Froſt doth firmly bind the Earth to the Roots, and then convey it to the Pit prepar'd for its new Station, which you may preſerve from freezing by laying ſtore of warm Litter in it, and ſo cloſe the Mould the better to the ſtraggling Fibres, placing what Earth you take out about your new Gueſt to preſerve it : But in caſe the Mould about it be ſo ponderous as not to be remov'd by any ordinary force, you may then raiſe it with a Crane or Gin, and by this means you may tranſplant Trees of a large Stature to ſupply any defect, or for the removal of a Curioſity : The beſt ſort of Trees to remove large is the *Elm*, eſpecially if to be plac'd in a moiſt place.

The beſt time for the removing of all Trees, except Winter Greens, of which I have particularly treated, is either in *October* or *February*, as I ſaid before : But if the Soil be moiſt, 'tis better to plant in *March*, that ſo the Trees may not ſtand ſobbing all the Winter to chill their

Roots. Though I have ſeveral times for a Curioſity remov'd ſome ſort of Trees at *Midſummer*, that have proſper'd very well, which I did after this manner; I made a hole large enough to contain the Roots of the Tree I deſigned to remove, into which I pour'd Water, and in that Water I put the Earth I took out of the hole, ſo as to make it a meer ſoft Sludge or Mud, and having taken up my Tree with as many Roots as I could, and abated the Head with the ſame Caution, I plung'd the Root into the Mud in the hole, where I let the Tree ſtand without taking any further care of it, except daily watering for about a Fortnight or three Weeks: And ſuch Trees have grown as well as thoſe planted in Winter, but then they were ſmall Trees. But as for the common Rules of Planting;

1. Obſerve to ſet your Trees deeper in light Ground than in ſtrong, but ſhalloweſt in Clay; ſix Inches is ſufficient for the drieſt, and two or three for the moiſt, provided you eſtabliſh them from the Winds, and ſhade them from the heat of the Sun; the beſt way of doing which is by Stakes, and round the Stem of the Tree to raiſe a ſmall Hill about two Foot thick, and four or five Foot in Diameter, which cover with Stones, Tiles, or mungy Straw, to keep it moiſt, and to prevent the Weeds growing, taking care after a competent time to remove them, elſe the Vermin, Snails and Inſects which they produce and ſhelter, will gnaw and injure the Bark. Abate about half a Foot of the heighth of the Hill, every Year, till they become level with the reſt of the Earth round the Tree, and carefully pull up what Weeds grow about them, becauſe they draw away the Heart of the Soil which ſhould give Nouriſhment to the Tree.

2. Where you dig your Holes for Trees, if it is in a Gravel Soil or Sand, mix Clay, or, which is better, Earth, Loam or Mud with the Earth

you fill into the Holes again; and if it is a ſtiff Clay, trench it with Straw, Thatch, Litter, Wood-Stack-Earth, *&c.* but let not the Roots touch any of theſe Mixtures, nor yet any Dung or Turf, but lay your Dung rather round upon the Surface of the Earth, and dig it in a little, covering of it with Mould to keep the Sun from drying of it. When you dig down your Hills, or dig about the Roots of your Trees, (which you ſhould mind carefully to do once a Year, the Advantage of which I will prove to you afterwards) and whereever you plant Trees, make your Earth as fine as you can.

3. For Trees, or moſt ſorts of Plants, the ſtrong blue, white or red Clay are ſome of the worſt Soils; but if any of theſe Lands have ſome Stones naturally in them, or the nearer they are to a Loam, by any mixture of Sand, they are much the better; ſo likewiſe is gravelly or ſandy Grounds, the nearer they are to a Loam, by a mixture of Clay; for a Loam or light brick Earth, compos'd of a due mixture of Clay and Sand, I reckon to be the beſt Land for Trees.

4. Plant in a warm moiſt Seaſon, the Air being tranquil and ſerene, the Wind weſterly, but never when it freezes, rains, or is miſty, for it moulds and infects the Roots; and if you Water any Trees you have new planted, it will ſettle the Earth the better to the Roots, and keep them moiſt.

5. Trees that have not been tranſplanted, or others that have, if their Roots go deep, you muſt have them abated, or elſe you will be neceſſitated to place them too deep; only the ſmall fibrous Roots muſt be ſpar'd as much as you can, for they are what affords the chief Nouriſhment to the Trees, and take them up with as much Earth as you can, letting the Holes, into which you tranſplant them, be left open for the Rain, Froſt and

Sun to mellow the Earth ſometime before you plant them.

6. If you take up a Tree, mind how the Roots grow, and diſpoſe of them in the ſame order where you new place them, ſpreading of the Roots carefully, obſerving to place the Tree to the ſame Aſpect that it grew before.

7. In the Spring rub off the ſide Buds to check the exuberancy of the Sap in the Branches, and to cauſe it to run up to the Head.

8. Tranſplant no more Trees than you can fence well from Cattel; eſpecially from Sheep, the Greaſe of whoſe Wool is very prejudicial to Trees, where they can only come at them to rub them. All young Trees ſhould likewiſe be defended from the Wind and the Sun; eſpecially thoſe of a tender ſort from the *North* and *Eaſt*, till the Roots are fix'd, and that you find them begin to ſhoot; the not exactly obſerving of which Point is the cauſe of the periſhing of moſt of our Plantations in Summer; and in Winter there is more danger to be fear'd from wet and cold, in Conjunction one with another, than the ſevereſt Froſt alone.

9. Wood well planted will grow in mooriſh, boggy, heathy and the ſtonieſt Ground; only the white and blue Clay is the worſt for Wood, as I ſaid before; and what large Timber you find in either of them (the Oak only excepted) is of a very great Age.

10. If the Seaſon require it, all new Plantations are to be well water'd, in *April* at their firſt budding, eſpecially the firſt Year of their planting, upon which depends much of their future growth; and what Water you pour on them let it be in a Circle, at ſome diſtance from the Roots, which ſhould continually be bar'd of Graſs and Weeds; and if the Water be rich, or impregnated with any Manure, the Shoots will ſoon diſcover it, for the Liquor being percolated or

ſtrain'd thro' the Earth, will carry the nitrous virtue of the Soil with it: By no means water at the Stem, becauſe it waſhes the Mould from the Roots, and lets the Water come too crude to them, which often endangers their rotting. If you fear dry Weather, do not defer too long before you water your Trees or Seeds, but water while your Ground is yet moiſt that it may keep ſo.

11. Young Trees will be ſtrangled with Corn, Oats, Peas, Hemp or any rank growing Corn or Weeds, if a competent Circle and Diſtance be not left (as of near a Yard or ſo) from the Stem.

12. Cut no Trees that have any large Pith in them, eſpecially being young and tender, when either Heat or Cold are in their extreams; nor in wet or ſnowy Weather, tho' the diſcharging Trees of unthrifty broken wind-ſhaken Boughs is a very great advantage to them when done in a good Seaſon. *Ever-greens*, eſpecially ſuch as are tender, prune not juſt after planting, but when you find by ſome ſmall freſh Shoot they have taken Root.

13. If you plant Fruit-trees, reduce them to a Head as ſoon as you can. As for Timber-trees, it is beſt not to head them at all, but to ſhred them up to one ſingle Bough, if the Soil be good that you plant them in; but if bad, the Sap will hardly run ſo high; and therefore in ſuch caſe it is better to head them; and when they are ſhot out, reduce the Head to one ſingle Branch; for which purpoſe, leave one of the moſt upright and thriving Boughs; and if your Top die, or your Tree meet with any prejudice from Cattel, ſo as to occaſion its breaking out of the Sides, which impedes both its Growth and Spring, prune off ſome of the Shoots, and quicken a leading Shoot with your Knife at ſome diſtance beneath its Infirmity; but if it be in a very unlikely Condition at Spring, cut off all cloſe to the Ground, and hope for a new Shoot, which nurſe up by cutting away all ſuperfluous

Branches. If you would not have a Tree put forth ſide-Branches, prune them up in *February*; and whatſoever ſide-Branches it puts out after, cut off at *Midſummer*, when the Sap is in them, and they will hardly ever ſprout again; tho' you muſt be cautious not to cauſe your Tree to have too great a Head for the Body; eſpecially if it is of a tender Wood, leſt the Wind break it; the way to prevent which, is lopping or thinning of the Head, or letting of the more ſide-Boughs grow out of it to check the Sap from running all into the top Branches.

14. *Wallnut*, *Aſh* and Pithy Trees you muſt by no means head when you tranſplant them; eſpecially the *Wallnut*; and if you have occaſion to lop off any of the Boughs, do it where they may be the leaſt expos'd to the wet, which I reckon the ſide Boughs to be; and late in the Spring, as about the latter end of *February*, or beginning of *March*, that the Bark may the ſooner heal the Wound.

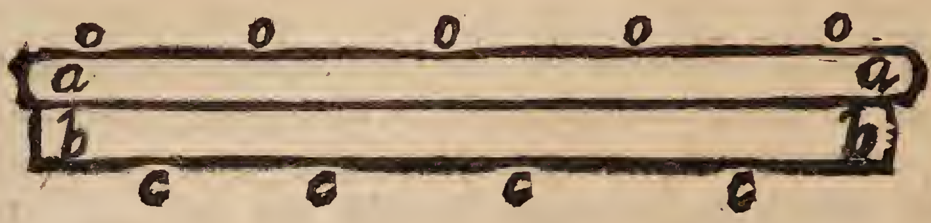
To preſerve Trees from Winds and Cattel that are expos'd to them, empale them with three or four quarter Stakes of a competent heighth, ſet triangular or quadrangular, and faſten them by one another with ſhort pieces above and beneath, in which a few Brambles may be ſtuck; except you will be at the charge of Pales, which will ſecure them without that fretting which Trees are otherways liable to that are only ſingle ſtak'd and buſh'd; but where Cattel don't come, a good piece of Rope ty'd about the Neck of the Tree upon a wiſp of Straw to preſerve them from galling, and the other end lightly ſtrain'd to a Hook or Peg in the Ground, will ſufficiently ſtabliſh the Tree againſt the Weſtern Blaſts, the Winds of other Quarters ſeldom doing them much much miſchief. If the Cords are well pitch'd they will laſt many Years.

Chap. III. *Of Planting of Avenues, Walks, &c.*

MOST Walks ſhould be made to lead to the Front of an Houſe, Garden-gate, High-way-gate, or Wood, or to terminate in a Proſpect; in all which caſes moſt People are apt to plant their Walks too narrow, ſo as not to give a fair Proſpect of what they are deſign'd for; as ſuppoſe them planted for an Avenue to an Houſe, whatever the length of the Walk is, it ought to be as wide as the whole breadth of the Front; and if it be long, the wider it is the better: And for Walks to Woods, Proſpects, *&c.* they ought to be at leaſt ſixty Foot in breadth; and becauſe ſuch Walks are a long time before they are ſhady, I would propoſe to plant a narrower Row on each ſide, rather than loſe the ſtatelineſs that the main Walk will afford by being broad, eſpecially where any thing of a Proſpect is to be gain'd; and if the Trees are any thing of a ſpreading kind, I would not have them planted nearer together than thirty five or forty Foot in the Row; and the ſame diſtance is to be obſerv'd if they are planted for a regular Grove.

Chap. IV. *Of the Planting of Trees in Hedges.*

THE beſt way of raiſing Trees in Hedges, is to plant them with the Quick, if you can preſerve them well from Cattel; but where Hedges are planted already, and Trees are wanting, I ſhould propoſe to plant them after this manner, as doing leaſt damage to the Hedge, and as affording the beſt Shelter, and giving room for the greateſt number of Trees to be planted. Let *a a* be the Bank that the Hedge ſtands on, and *b b* the Ditch, and let all the Trees be planted, not on the Bank



where the Hedge ſtands, as the common way is, but at the bottom of the Bank, about a Yard from the Hedge; which will prevent their dropping on it, as at *ooooo*: And over-againſt them, on the other ſide of the Ditch, about a Yard from it, not in a direct Line, but in the Intervals, let another Row be planted, as at *cccc*; and if each other of theſe Trees be a ſpiring Tree, and the odd one between, a Fruit-tree to ſpread, they may be planted the nearer together, and will afford the better Shelter.

Chap. V. *Of the Infirmities of Trees.*

THere are ſeveral Diſeaſes and Caſualties that ſpoil Trees, and affect the ſeveral parts of them, that are carefully to be look'd after.

1. Weeds, ſuch being diligently to be pluck'd up by hand after Rain as can be ſo eradicated; eſpecially while the Trees are young, and not able to overdrop them; but for the ſtronger Weeds, they muſt be extirpated with the Howe, Spade, or other Inſtrument, being very prejudicial to the Trees in robbing them of their Nouriſhment, and in choaking ſuch as are young.

2. Suckers ſhould be cut off cloſe to the place they put out from, opening the Earth that you may come well at them; and if you find them rooted, you may ſet them again: But they ſay, Trees grafted upon them are more apt to produce Suckers than other Trees.

3. Over-much Wet often prejudices Trees; eſpecially ſuch kinds as require drier Ground, which is to be help'd by Drains; and if a Drip fret the body of a Tree by the Head (which will certainly decay it) cut firſt the Place ſmooth, and apply to it, ſo as to cover the Wound, ſome Loam or Clay mixed with Horſe-dung, which keep to it till a new Bark ſucceed.

4. If a Tree is Bark-bound, ſlit through the Bark from the top to the bottom in *February* or *March*, which will do moſt Trees good, but no harm to any; and if the gaping be much, fill the Rift with Cow-dung: Alſo the cutting off of ſome Branches is profitable, eſpecially ſuch as are any ways blaſted or Lightning-ſtruck; and ſo is digging about the Tree, it being many times occaſion'd from the baking of the Earth about the Stem.

5. The *Teredo*, *Coſſi*, and other Worms lying between the Body and the Bark, poiſon the paſſage of the Sap, to the great prejudice of the Trees; but the Holes where they lie being found out, open them, and make a ſmall ſlit from the bottom of them to let any moiſture that may fall in them, run out, and do the Place over with Loam.

6. Trees, eſpecially Fruit-bearers, are often infected with the Meaſles by being burn'd and ſcorched with the Sun in great Droughts. To this commonly ſucceeds Lowſineſs, which is cur'd by boring a hole into the principal Root, and pouring in a quantity of Brandy, ſtopping the Orifice up with a Pin of the ſame Wood.

7. Excorticated and Bark-bar'd Trees may be preſerv'd by nouriſhing up a Shoot from the Foot, or below the ſtripp'd place, cutting the Body of the Tree ſloping off a little above the Shoot, and it will quickly heal and be cover'd with Bark like a Tree new grafted; and if you cover the top with Clay and Horſe-dung in the ſame manner as you do a Graft, it will help to heal the ſooner.

8. Deer, Conies, and Hares, by barking of Trees, often do them very great Miſchief, and many times deſtroy them quite. To preſerve them from Deer, fence them with Pales; but to preſerve them from Conies and Hares, Mr. *Evelyn* propoſes the anointing of them with *Stercus humanum* temper'd with a little Water or Urine, and lightly bruſh'd on, this to be renew'd after every Rain, or to ſprinkle Tanners Liquor on them, which they uſe for dreſſing their Hides; alſo tie Thumb-bands of Hay or Straw round them as far as they can reach. I have not experienc'd any of theſe ways; but Tar and Lime, which I have known ſome uſe, will bind the Bark, and make it ſo hard that the Tree will not thrive.

9. Moſs is to be rubb'd and ſcrap'd off with ſome fit Inſtrument of Wood which may not hurt the Bark of the Tree, or with a piece of Hair-cloth, after a ſoaking Rain. But the moſt certain way to cure it is by taking away the Cauſe; which is, to drain the Land well from all ſuperfluous Water, and to prevent it in the firſt planting of your Trees by not ſetting them too deep.

Vid. Book 14. *Ch.* 8.

10. Ivy, Briony, Honey-ſuckles, and other Climbers, muſt be dug up, leſt they ſpoil your Trees by pinching and making them crooked.

11. Wind-ſhock is a Bruiſe and Shiver throughout the Tree, but not always viſible, twiſting the Warp from ſmooth-renting, being occaſion'd by High-winds, and perhaps by ſubtil Lightnings, thoſe Trees being moſt in danger of it whoſe Boughs grow more out on the one ſide than the other. The beſt prevention is Shelter, choice of place for the Plantation, and frequent ſhredding up while young.

But as the Winds often ſpoil Trees by twiſting them, they many times do them as much Miſchief in proſtrating of them; which, tho' it cannot properly be call'd an Infirmity of the Tree, yet the Winds are many times a principal cauſe of rendring them infirm; for which there is no better

Remedy than what is already propoſed: But in caſe any Trees ſhould chance to be blown down which you deſire to preſerve or redreſs, be not over-haſty to remove them, but cut off their Heads, and let them lie, and many times the weight of the Roots will bring them up; but if not, take ſome of the looſe Earth out of the Hole that the Tree hath made, and cut off ſome of the ſtraggling Roots that hinder it from falling back, and you may eaſily redreſs them.

12. Cankers are cauſed by ſome ſtroke or galling, or by hot burning ſtony Land. They muſt be cut out to the quick, and the Scars emplaſtred with Tar mingled with Oil, and over that Loam thin ſpread; or elſe with Clay and Horſe-dung, but beſt with Hogs-dung alone bound to it with a Rag, or by laying Aſhes, Nettles, or Fern to the Roots, *&c.* But if the Canker be in a Bough, cut it off; if a large Bough at ſome diſtance from the body of the Tree; but if a ſmall one, cut it cloſe to it. But for over-hot ſtony Land, yon muſt cool the Mould about the Roots with Pond-mud and Cow-dung: And for Fruit-trees, the beſt way to raiſe them on ſuch Land, is to graft them on Crab-ſtocks rais'd in the ſame Mould.

13. Hollowneſs is contracted by the ignorant or careleſs Lopping of Trees, ſo as that the wet is ſuffer'd to fall perpendicularly upon any part of it, eſpecially the Head: In this caſe, if there is ſufficient ſound Wood, cut it to the quick cloſe to the Body, ſo as to make it as ſloaping as you can, that the wet may fall from it, and cap the hollow part with a Tarpaulin, or fill it with good ſtiff Loam, Horſe-dung, and fine Hay mix'd together. This is one of the worſt Evils belonging to Trees, and what all ſoft Woods are very liable to if lopped; eſpecially the Elm, which is much better to be ſhred up, the Side-boughs of which will yield a conſtant Lop, and the Bodies afterwards be good Timber, whereas when lopped they

ſoon decay and periſh ; tho' many times a Spire Elm will begin to grow hollow at the bottom when any of its Roots happen to periſh ; but the Unthriftineſs of its Branches will quickly diſcover it.

14. Hornets and Waſps do miſchief to Trees by breeding in them, which are deſtroy'd by fuming of their Cells in the Night with Brimſtone, or by ſtopping up their holes with Tar and Gooſe-dung.

15. Ear-wigs and Snails do ſeldom infect Timber Trees, but are very prejudicial to Fruit ; and ſo are likewiſe Piſmires, Caterpillars, Mice, Moles, *&c.* of which I have already treated.

Mice, Moles, and Piſmires, cauſe the Jaundice in Trees, which is known by the diſcolour of their Leaves and Buds.

16. Blaſted parts of Trees are to be cut away to the quick ; and to prevent it in the bloſſoms, ſmoak them in ſuſpicious Weather by burning moiſt Straw, or the ſuperfluous Cuttings of Aromatick Herbs, as Roſemary, Lavender, Juniper, *&c.*

17. Rooks do great prejudice to Trees by cropping off the tops of old ones, and by lighting on young ones, whoſe weight breaks the tender Branches and often ſpoils their Tops : They alſo deſtroy Seedlings where they breed, and their Dung breeds Nettles and Weeds.

Chap. VI. *Of Pruning Foreſt-trees.*

As to the pruning of Trees, it is a Work that requires a great deal of Skill and Care, and for which general Rules cannot well be given, becauſe of the great variety which is met with in doing of it ; only you may obſerve, that whatſoever Shape you deſign your Tree ſhall have, form it to that Shape as much as you can while it's young, becauſe young ones will beſt bear pruning, when their Boughs are ſmall, and ſooneſt heal when cut off :

But for thoſe Trees which you deſign for Timber, be cautious of cutting off their Heads, as I told you before, eſpecially thoſe that have great Piths, as the Aſh, Wallnut, *&c.* and all ſoft Woods, as the Elm, Poplar, *&c.* But if your Trees grow too top-heavy, you muſt abate the Head to lighten them, which in many Trees it's better to do by thinning of ſome of the Boughs that ſhoot out of the ſides of the main Branches, ſo as to let the Wind have a paſſage thro' them, than by cutting off the main Branches themſelves, eſpecially if you deſign them for ſpreading Trees; but if you deſign them for ſpiring Trees, it is beſt done by rubbing off the Buds as they put out in Spring, and by ſhredding up the ſide-Shoots, which muſt be done ſparingly, ſo as to leave here and there a Bough; and when any new Shoots put out, you may ſave them and cut off the former, always taking care to cut off the largeſt, and leave the ſmalleſt to give a check to the Sap where it runs too much up to the Head, ſo as to endanger the breaking of it where the Body is too weak; but where it is ſtrong and able to bear it, you may be the bolder in ſhredding of it up, minding alway to proportion the Head to the Body by keeping of it ſmall, and by maintaining of the leading Shoot, and particularly taking care that it do not run up with a Fork till you have got your Tree to the intended heighth, then let the Head break out, and cut off all the ſide-Boughs. If you find the ſide-Boughs ſtill breaking out, and that your Top is able to ſuſtain it ſelf, to the Boughs that put out in Spring, give a Summer pruning a little after Midſummer, cutting them very cloſe; this will cauſe the Bark to cover them and kill them ſo as not to ſhoot out again, as I ſaid before; which is the only way to make your Tree grow with a fine ſtreight handſome Body. But I know moſt are againſt pruning Timber Trees at all; and I grant that where Trees do naturally grow ſtreight it is better; but I cannot think the pruning of a young Tree, provided you cut the Boughs cloſe, can do them any great harm; becauſe I believe if they heal the Wound quite, or if they do not, the Cut lying near the Pith can be no prejudice if the Tree is us'd for a Beam, or for any other occaſion where it is us'd ſquare; or for any other Uſes that require its being quarter'd; becauſe it brings any ſuch Defects to be near the edge, and ſo the four parts will be ſound: As for great Trees, that is, Foreſt Trees (for of Fruit-Trees I deſign to treat in another place) I am not for pruning them at all, except in caſes of very great Neceſſity; and in ſuch caſes avoid the cutting off large Boughs as much as you can; but whatſoever Boughs you cut off, if it is ſmall, cut it off ſmooth and cloſe, ſo as the Bark may quickly cover it; and ſloaping, ſo as the Water may run off and not ſoak into it; but if the Bough is large, and the Tree old, cut it off at ſome diſtance from the Tree, as at three or four foot, or where you find any young Shoots coming out of the ſides of it; but by no means leave any Stumps to ſtand out at any diſtance, becauſe they cannot be cover'd by the Bark, till the diameter of the Tree grows beyond it, and in the mean time the Stump will be continually rotting, and a Conduit-pipe to convey Water to the heart of the Tree, which will certainly decay and kill the whole Body: And all Boughs that grow upright, be they great or little, cut them not right croſs over, but ſloaping upwards; and thoſe Boughs that lean from the Head, cut the ſloap on the lower-ſide; and if you have occaſion to make any great Wounds, cover them over with Clay mix'd with Horſe-dung, and they will heal the ſooner, as I ſaid before.

But if your Tree grow crooked, at the crooked place cut it off ſloaping upwards, and nurſe up one of the principal Shoots to be a leading Shoot, except it is of ſuch a ſort as is ſubject to die when headed, of which the Beech is one of the worſt to head; or if any Trees are very great, do not meddle with them; but crooked Trees may be made ſtreight by ſhredding up of the Side-branches till you come above the Crook, where they are young.

The beſt time to prune Trees is in *February*, which ſhould be repeated where need of pruning is every Year, or every ſecond Year, that ſo the Tree may eaſily over-grow the Knot, and the place will not be very ſubject to put forth Suckers, becauſe the Sap hath had no great Recourſe to it; only obſerve, that if you are to cut a Bough of any bigneſs, that you give it a chop or two underneath, leſt when it falls it ſtrip part of the Bark away with it; and likewiſe, that if you keep any Trees for Pollards, that you head them every ten Years; for if you let the Boughs grow large, they will be the longer before the Bark covers them, and be apt to let Water into the Body, which will ſoon ſpoil their bearing of Lop. Vid. *Pruning of Fruit-Trees*, Book 14. Chap. 18.

Chap. VII. *Of the Age and Stature of Trees.*

As to the Age, Stature, and Growth of Trees, I ſhall refer you to Mr. *Evelyn*, who is very copious in this particular; and only obſerve, that the Growth of moſt Trees, for the Circumference of them (it being eaſily ſeen what length the Top-ſhoots grow) is from about one to two Inches in a Year, and that the Increaſe of ſmall and large Trees is much the ſame, provided they are alike thrifty. I have an Oak that grows in the middle of a Corn-field that is conſtantly plow'd about, and the Cattle often lie under it and dung it, growing upon a red brick Earth, that is at leaſt forty foot deep, whoſe increaſe is ſome Years four Inches in a Year, whereas the common Growth of other Trees is but about an Inch and a quarter, or an

Inch and an half in Circumference; which ſhews the Advantage of what I propos'd before, of digging and dunging about Trees, and of killing the Weeds about them, which I reckon the greateſt Prejudice of any thing to the Growth of Trees, in drawing away the heart of the Ground from them: And I am ſatisfied by ſeveral Meaſures that I have taken of the Growth of Trees, that Buſhes and Underwood (tho' they are by many eſteem'd to be as prejudicial as Weeds) are a very great help to the Growth of Trees; and the greateſt of any, except digging and dunging about them; for they both improve the Land, and keep their Roots moiſt. But as I find an Account of very great and quick Growth of Trees in ſeveral Authors, I would deſire, that where any ſuch Growth of Trees is, that they that are willing to encourage Husbandry, would be pleas'd to meaſure the Circumference that they grow in a Year; and likewiſe to be particular in inquiring into the Nature of the Soil, and likewiſe into the Depth of that Soil they grow upon, and to communicate it to the Publiſhers, that I may be able, in my *Appendix*, to give an Account what ſort of Land it is that is moſt likely to be ſo improv'd by Trees; which will be an Advantage for thoſe to know that have Land of the ſame kind, and likewiſe an Encouragement to the Planting and Raiſing of Timber.

Chap. VIII. *Of the Felling of Trees.*

I Have already given an Account of the Signs that ſhew the Unthriftineſs of a Tree: And therefore when you are reſolv'd to fell any of them, the firſt thing to be taken care of is a ſkilful disbranching ſuch Limbs as may endanger them in their Fall, wherein much Fore-caſt and Skill is requir'd, many Trees being utterly ſpoil'd for want of this care; and therefore in Arms of Timber that are very great, chop a Nick under them cloſe to the Bole; and ſo meeting it with downright Strokes, it will be ſever'd without ſplitting, as I ſaid before.

2. In felling of Timber take care to cut them as near the Ground as poſſible, unleſs you deſign to grub them up, which to do is of Advantage both for the Timber and Wood, becauſe they do not reckon the Timber good that grows out of old Stools. The price of Felling of Trees is 12 *d. per* Load, and 3 *s.* a Load hewing.

When your Tree is down, ſtrip off the Bark, and ſet it ſo as it may dry well, and be well cover'd from the wet in caſe of Rain; and then cleanſe the Bole of the Branches that are left, and ſaw it into Lengths, if you do not ſell it to the Timber-buyers to do it for themſelves.

The common way of dealing with whom, is to ſell your Timber as it ſtands, (which is a very uncertain way) or by the Ton, Load, or Foot, forty Foot being reckon'd a Ton, and Fifty a Load, which you meaſure either by girt or ſquare Meaſure. They reckon that forty Foot of round Timber, or fifty Foot of hewn or ſquare Timber weighs the ſame, that is, twenty hundred, which is commonly accounted a Cart-load; and as they ſeldom ſtrip the Bark off of Elm or Aſh, they commonly allow one Inch for the Bark, which is a great deal more than it comes to: And therefore if you can ſtrip off the Bark in the meaſuring-place, which ſhould be always about the middle of the Tree, it will be better. Some allow four Foot out of every Load for Aſh, and five Foot for Oak and Elm: And as for the Computation of the Feet, if it is ſquare Meaſure, the ſquare is taken by a pair of Cannipers, or two Rulers clap'd to the ſide of the Tree, meaſuring the diſtance between them;

and if the Sides are unequal, they add them together, and take half the Sum, which they account the true ſide of the ſquare; but if girt Meaſure, by girting of the middle of the Tree with a Line, and taking a quarter-part of that girt for the ſquare, meaſuring the length from the Butt-end ſo far forwards till the Tree comes to be 6 Inches girt, that is, 24 Inches in Circumference; and if the Trees have any great Boughs which are Timber, that is, which hold ſix Inches girt, they meaſure them by themſelves and add them to the whole: For the caſting up the Contents of which, they make uſe of *Gunter*'s Line, upon which if you extend your Compaſſes from 12 to the number of Inches contained in the ſquare, and placing one foot of the Compaſſes at the length, and keeping of the ſame extent with your Compaſſes, if your Square is under 12 Inches turn your Compaſſes twice towards 12; if above, twice from 12, and it will ſhew you the Contents: The way of doing which, any one that underſtands it will ſhew you in a very little time; which way, tho' it is a falſe way of meaſuring, being near a fifth part ſhort of its true meaſure, yet it being the common Practice, you muſt be guided by it. But as many of the Rules are falſe, and that upon ſeveral Occaſions and Diſputes it may be neceſſary to try your Meaſure ſeveral ways, I ſhall firſt propoſe the doing of it by common Arithmetick: As, ſuppoſe a Tree 40 Inches girt, and 30 Foot long; the 4th part of 40 Inches is 10 Inches: Now,

The Rule is as 12 to 10 the ſquare Inches,
So is 30 Foot the length to a fourth Number;

and that fourth Number tells you the Contents in Feet.

But to work this the common way, take the fourth part of the Circumference to be the ſide of the ſquare of the Tree (tho' erroneous) and meaſure

ſure it as a Cylinder. The fourth part of 40 is 10, which multiply'd by it ſelf is 100: And 30 Foot the length multiply'd by 12 makes 360, which multiply'd by 100, the ſquare of the Tree, gives 36000, the number of ſquare Inches in the Tree: Which Sum divided by 1728 the ſquare Inches that are in a ſolid Foot, gives 20 Feet, and about three fourths, and odd Fractions, being no ways material in Timber-Meaſure.

$$\begin{array}{r} 10 \\ \underline{10} \\ \underline{100} \\ 30 \\ \underline{12} \\ 60 \\ \underline{30} \\ \underline{360} \\ \underline{360} \\ 100 \\ 36000 \end{array}$$

$$\begin{array}{r} 14 \\ \cancel{1}\cancel{2}\cancel{6}40 \\ \cancel{3}\cancel{6}\cancel{0}00 \\ \cancel{1}\cancel{7}\cancel{2}88 \\ 172 \end{array} \;(20\tfrac{1440}{1728}$$

Now to try this by the following Table, look for 10 Inches in the Left-hand Column, and for 30 Foot at the top, which is the length, and you will find 20 Foot, and (82 parts of a hundred, which is about) three fourths of a Foot.

The following Table of girt and ſquare Meaſure, Numb. 1. is what you may ſee the Contents of any piece of Timber by, according to the common way of meaſuring Timber, from half an Inch ſquare to 36 Inches, and in length from 1 Foot to 30.

EXAMPLE.

Suppoſe a Tree the Circumference of which is 136 Inches as girt by the Line, which doubled four times makes the ſquare or quarter part 34 Inches: Which Number look for in the firſt Column of the following Table, and ſuppoſing the length of the Piece to be 9 Foot, in the Column under 9, againſt 34 Inches, you will find 72: 25, which is 72 Feet, and 25 of the hundreth parts of a Foot, which makes 72 Feet and a quarter; which is the Contents of a piece of Timber of that Dimenſion.

A Table of Girt and Square Meaſ. *N.* 1.

The Length of the Timber in Feet.

The Square of Timber in Inches and Half-inches.

In.	1		2		3		4		5		6	
	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.
	0	00	0	00	0	00	0	01	0	01	0	01
1	0	01	0	01	0	02	0	03	0	03	0	04
	0	01	0	03	0	05	0	06	0	08	0	09
2	0	03	0	05	0	08	0	11	0	14	0	17
	0	04	0	08	0	13	0	17	0	21	0	26
3	0	06	0	12	0	18	0	25	0	31	0	37
	0	08	0	17	0	25	0	34	0	42	0	51
4	0	11	0	22	0	33	0	44	0	55	0	66
	0	14	0	28	0	42	0	56	0	70	0	84
5	0	17	0	35	0	52	0	69	0	81	1	04
	0	21	0	42	0	63	0	84	1	05	1	26
6	0	25	0	50	0	75	1	00	1	25	1	50
	0	29	0	58	0	88	1	17	1	46	1	76
7	0	34	0	68	1	02	1	36	1	70	2	04
	0	39	0	78	1	17	1	56	1	95	2	34
8	0	44	0	89	1	33	1	77	2	22	2	66
	0	50	1	00	1	50	2	01	2	51	3	01
9	0	56	1	12	1	68	2	25	2	81	3	37
	0	63	1	25	1	88	2	51	3	13	3	76
10	0	69	1	39	2	08	2	87	3	47	4	16
	0	76	1	53	2	29	3	06	3	82	4	59
11	0	84	1	68	2	52	3	36	4	20	5	04
	0	92	1	84	2	76	3	67	4	59	5	51
12	1	00	2	00	3	00	4	00	5	00	6	00

A Table of Girt and Square Meaſ. *N.* 1.

The Length of the Timber in Feet.

The Square of Timber in Inches and Half-inches.

In.	7	8	9	10	20	30
	Ft. Pt.	Ft. Pt.	Ft. Pt.	Ft. Pt.	Ft. Pt.	Ft. Pt.
	0 01	0 01	0 02	0 02	0 04	0 06
1	0 05	0 05	0 06	0 07	0 14	0 21
	0 11	0 13	0 15	0 16	0 32	0 48
2	0 19	0 22	0 25	0 28	0 56	0 84
	0 30	0 34	0 39	0 43	0 86	1 29
3	0 43	0 49	0 56	0 62	1 24	1 86
	0 59	0 68	0 76	0 85	1 70	2 55
4	0 78	0 89	0 99	1 11	2 22	3 33
	0 98	1 12	1 26	1 40	2 80	4 20
5	1 22	1 39	1 56	1 74	3 48	5 22
	1 47	1 68	1 89	2 10	4 20	6 30
6	1 55	2 00	2 25	2 50	5 00	7 50
	2 05	2 34	2 64	2 93	5 86	8 79
7	2 38	2 72	3 06	3 40	6 80	10 20
	2 73	3 12	3 51	3 90	7 80	11 70
8	3 11	3 55	3 99	4 44	8 88	13 32
	3 51	4 01	4 52	5 02	10 04	15 06
9	3 93	4 49	5 06	5 62	11 24	16 86
	4 29	5 01	5 64	6 27	12 54	18 81
10	4 86	5 55	6 24	6 94	13 88	20 82
	5 35	6 12	6 88	7 65	15 30	22 95
11	5 88	6 72	7 56	8 40	16 80	25 20
	6 43	7 35	8 27	9 19	18 38	27 57
12	7 00	8 00	9 00	10 00	20 00	30 00

A Table of Girt and Square Meaſ. *N.* 1.

The Length of the Timber in Feet.

The Square of Timber in Inches and Half-inches.

In.	1		2		3		4		5		6	
	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.
.	1	08	2	17	3	25	4	34	5	42	6	51
13	1	17	2	35	3	51	4	69	5	87	7	04
.	1	26	2	53	3	80	5	06	6	33	7	59
14	1	36	2	72	4	08	5	44	6	8c	8	16
.	1	46	2	92	4	38	5	80	7	3c	8	76
15	1	55	3	12	4	68	6	25	7	81	9	37
	1	67	3	33	5	00	6	67	8	34	10	01
16	1	78	3	55	5	33	7	11	8	89	10	67
	1	89	3	78	5	67	7	56	9	45	11	34
17	2	1	4	01	6	02	8	03	10	03	12	04
	2	13	4	25	6	38	8	51	10	63	12	76
18	2	25	4	50	6	25	9	00	11	25	13	50
	2	38	4	75	7	13	9	51	11	88	14	26
19	2	51	5	01	7	52	10	03	12	53	15	04
	2	64	5	28	7	82	10	56	13	20	15	64
20	2	78	5	55	8	33	11	11	13	89	16	67
	2	92	5	83	8	75	11	67	14	59	17	51
21	3	06	6	12	9	18	12	25	15	31	18	37
	3	11	6	42	9	63	12	84	16	05	19	26
22	3	36	6	72	10	08	13	44	16	80	20	16
	3	51	7	03	10	55	14	06	17	58	21	09
23	3	67	7	34	11	02	14	69	18	36	22	04
.	3	83	7	67	11	50	15	34	19	17	23	01
24	4	00	8	00	12	00	16	00	20	00	24	00

A Table of Girt and Square Meaſ. *N.* 1.

The Length of the Timber in Feet.

The Square of Timber in Inches and Half-inches.

In.	7		8		9		10		20		30	
	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.
	7	51	8	68	9	76	10	85	21	70	32	55
13	8	22	9	39	10	56	11	87	23	48	35	22
	8	86	10	13	11	39	12	66	25	32	37	98
14	9	53	10	89	12	25	13	61	27	22	40	83
	10	22	11	68	13	14	14	60	29	20	43	80
15	10	93	12	49	14	06	15	62	31	24	46	86
	11	67	13	34	15	01	16	68	33	36	50	04
16	12	44	14	22	16	00	17	78	35	56	53	34
	13	24	15	13	17	02	18	91	39	82	58	73
17	14	05	16	05	18	06	20	07	40	14	60	21
	14	89	17	01	19	14	21	27	42	54	63	81
18	15	75	18	10	20	25	22	50	45	00	67	50
	16	64	19	01	21	39	23	77	47	54	71	31
19	17	55	20	05	22	56	25	07	50	14	75	21
	18	49	21	13	23	77	26	41	52	82	79	23
20	19	40	22	22	25	00	27	78	55	56	83	34
	20	42	23	34	26	26	29	18	58	36	87	54
21	21	43	24	49	27	56	30	62	61	24	91	86
	22	47	25	68	28	89	32	10	64	20	96	30
22	23	53	26	89	30	25	33	61	67	22	100	83
	24	61	28	13	31	64	35	16	70	32	105	48
23	25	77	29	38	33	06	36	73	73	46	110	19
	26	84	30	68	34	51	38	35	76	70	115	05
24	28	00	32	00	36	00	40	00	80	00	120	00

A Table of Girt and Square Meaſ. *N.* 1.

The Length of the Timber in Feet.

The Square of Timber in Inches and Half-inches.

In.	1		2		3		4		5		6	
	Ft.	Pt.	Ft.	Pt.	Ft.	Pt	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.
	4	16	8	33	12	50	16	66	20	83	24	99
25	4	34	8	68	13	02	17	36	21	70	26	04
	4	51	9	02	13	54	18	05	22	56	27	08
26	4	69	9	39	14	08	18	77	23	47	28	16
	4	88	9	75	14	63	19	51	24	38	29	26
27	5	06	10	12	15	19	20	25	25	31	30	38
	5	25	10	50	15	75	21	00	26	85	31	50
28	5	44	10	89	16	33	21	78	27	22	32	67
	5	67	11	34	17	01	22	68	28	35	34	02
29	5	84	11	68	17	52	23	36	29	20	35	04
	6	04	12	08	18	13	24	17	30	21	36	26
30	6	25	12	50	18	75	25	00	31	25	37	50
	6	46	12	91	19	38	25	84	32	30	38	75
31	6	67	13	34	20	02	26	69	33	36	40	04
	6	89	13	78	20	67	27	56	34	45	41	34
32	7	11	14	22	21	33	28	44	35	55	42	66
	7	33	14	66	21	99	29	33	36	66	43	99
33	7	56	15	12	22	68	30	24	37	81	45	37
	7	78	15	56	23	34	31	12	38	90	46	68
34	8	03	16	05	24	08	32	11	40	14	48	17
	8	26	16	52	24	79	33	05	41	31	49	58
35	8	54	17	01	25	52	34	03	42	53	51	04
	8	70	17	50	26	25	35	00	43	75	52	50
36	9	00	18	00	27	00	36	00	45	00	54	00

A Table of Girt and Square Meaſ. *N.* 1.

The Length of the Timber in Feet.

The Square of Timber in Inches and Half-inches.

In.	7		8		9		10		20		30	
	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt.	Ft.	Pt
	29	16	33	33	37	49	41	66	83	32	124	98
25	30	38	34	72	39	06	43	40	86	80	130	20
	31	59	36	10	40	62	45	13	90	26	135	39
26	32	86	37	55	42	24	46	94	93	88	140	82
	34	14	39	01	43	89	48	77	97	54	146	31
27	35	44	40	50	45	57	50	63	101	26	151	89
	36	75	42	00	47	25	52	50	105	00	157	50
28	38	11	43	56	49	00	54	45	109	35	164	35
	39	69	45	36	51	03	56	70	113	40	170	10
29	40	88	46	88	52	56	58	40	116	80	175	20
	42	30	48	34	54	39	60	43	120	86	181	29
30	43	75	50	00	56	25	62	50	125	00	187	00
	45	22	51	68	58	14	64	60	129	20	193	80
31	46	71	53	36	60	06	66	50	133	00	199	00
	48	23	55	12	62	01	68	40	136	80	204	20
32	49	78	56	89	63	99	71	11	142	22	213	33
	51	33	58	66	65	99	73	33	146	66	219	99
33	52	93	60	49	68	06	75	62	151	24	226	86
	54	46	62	24	70	02	78	80	157	60	236	40
34	56	19	64	22	72	25	80	28	160	36	240	54
	57	84	66	10	74	37	82	63	165	26	247	89
35	59	55	58	05	76	56	85	07	170	14	255	21
	61	25	70	00	78	75	87	50	75	00	262	50
36	63	00	72	00	81	00	90	00	180	00	270	00

This Table, *Numb.* 2. is to ſhew how much in length will make a ſolid Foot of any Tree, whoſe quarter-part of the Circumference is from 6 Inches to 36 Inches.

EXAMPLE.

Suppoſe a Tree of 60 Inches in Circumference, the fourth part of which is 15 Inches, or 1 Foot 3 Inches; which if you look for in the firſt Column, oppoſite to it in the ſecond Column you will find 7 Inches and 6 tenth parts of an Inch (which is ſomewhat above half an Inch) and ſo much in in length will make one Foot ſquare.

Numb. 2.

Ft.	In.	Ft.	In.	Pts.
0	6	4	0	0
	7	2	11	2
	8	2	3	0
	9	1	9	3
	10	1	3	3
	11	1	2	3
I.	0	1	0	0
	1		10	2
	2		8	8
	3		7	6
	4		6	7
	5		5	9
	6		5	3
	7		4	8
	8		4	3
	9		3	9
	10		3	5
	11		3	3
II.	0		3	0
	1		2	8
	2		2	6
	3		2	3
	4		2	2
	5		2	1
	6		1	9
	7		1	8
	8		1	7
	9		1	6
	10		1	5
	11		1	4
III.			1	3

Numb 5.

A Table to meaſure Plank, Boards, *&c.*

Ft.	In.	Ft.	In.	Pt.
	1	12	0	0
	2	6	0	0
	3	4	0	0
	4	3	0	0
	5	2	4	8
	6	2	0	0
	7	1	8	6
	8	1	6	0
	9	1	4	0
	10	1	2	4
	11	1	1	1
I.	0	1	0	0
	1	0	11	8
	2	0	10	3
	3	0	9	6
	4	0	9	0
	5	0	8	5
	6	0	8	0
	7	0	7	6
	8	0	7	2
	9	0	6	8
	10	0	6	5
	11	0	6	2
II.	0	0	6	0
	1	0	5	8
	2	0	5	5
	3	0	5	3
	4	0	5	1
	5	0	5	0
	6	0	4	8
	7	0	4	7
	8	0	4	5
	9	0	4	4
	10	0	4	2
	11	0	4	1
III.	0	0	4	0

By this Table ſuppoſe a Plank or Board 9 Inches broad, to find how much in length will make one Foot.

Firſt find out 9 Inches in the firſt Column, oppoſite to it in the ſecond Column you will find 1 4 0 which is one Foot four Inches, ſo much in length of a Plank or Board 9 Inches broad going to make up a Foot: So that every 16 Inches in length is a Foot of Plank; and conſequently, every 8 Inches half a Foot, every 4 Inches a quarter, *&c.* Thus again, If a Board hold 2 Foot and 3 Inches in breadth, 5 Inches and 3 tenth parts of an Inch in length will make a ſquare ſuperficial Foot of Plank, *&c.*

This Table of Square Meaſure ſhews how much goes to make a ſolid Foot of any piece of Timber, from 1 Inch to 30 Inches ſquare.

EXAMPLE.

I would know how long a piece of Timber of 10 Inches ſquare ought to be to contain a Foot of Timber? Look for 10 in the Left-hand Column, oppoſite to which you'll find 1 Foot 5 Inches and 2 tenths of an Inch; which is the Length that makes a ſolid Foot.

Numb. 4.

A Table of Square Meaſure.

Inches.	Ft.	In.	Pt.
1	144	0	0
2	36	0	0
3	16	0	0
4	9	0	0
5	5	9	1
6	4	0	0
7	2	11	2
8	2	3	0
9	1	9	3
10	1	5	2
11	1	2	2
12	1	0	0
13		10	2
14		8	8
15		7	6
16		6	7
17		5	9
18		5	3
19		4	7
20		4	3
21		3	9
22		3	5
23		3	2
24		3	0
25		2	7
26		2	5
27		2	3
28		2	2
29		2	0
30		1	9

Numb 5.

A Table of Round Meaſure.

Inches.	Ft.	In.	Pt.
1	113	1	7
2	28	3	4
3	12	6	8
4	7	0	8
5	4	6	3
6	3	1	7
7	2	3	7
8	1	9	2
9	1	4	7
10	1	1	5
11		11	2
12		9	4
13		8	4
14		6	9
15		6	0
16		5	3
17		4	6
18		4	1
19		3	7
20		3	3
21		3	1
22		2	8
23		2	5
24		2	3
25		2	1
26		2	0
27		1	8
28		1	7
29		1	6
30		1	5

This Table of Round Meaſure ſhews how much in length makes a ſolid Foot of Timber in any round piece whoſe Diameter is from one Inch to 30 Inches over.

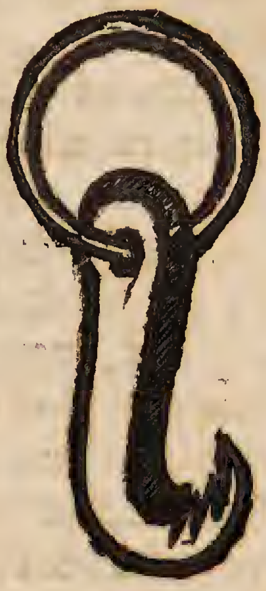
EXAMPLE.

I would know how much an exact round piece of Timber, containing but one Inch in Diameter, muſt be in length to make a ſolid Foot of Timber? Look in the firſt Column for one Inch, and oppoſite to it you will find 113 Foot, 1 Inch and 7 tenth parts of an Inch; which is the Contents ſought for.

If you have a mind to know the Value of a Tree ſtanding, you may girt it, and allowing for the Bark, and ſo much as you think it will meaſure leſs in the girting-place than at the Butt, and taking of the heighth of it, compare it with the foregoing Tables, and you may the better gueſs at its Worth, becauſe you have a Rule to go by. Now for the taking of the height of a Tree, the beſt way is with a Quadrant, which the larger 'tis, the more exact you may be in doing of it; which is done after this manner: Hold your Quadrant ſo as that your Plummet may fall on 45 degrees, and go to ſuch a diſtance from the Tree as you may, through the Sights of your Quadrant, ſee the top of it; and meaſure from the place of your ſtanding to the foot of the Tree, adding to it the heighth of your Eye from the Ground, and it will give you the heighth deſir'd: Or if you ſtand where the Plummet may fall on 22 Degrees and 30 Minutes, it will be half the heighth; or 67 Degrees and 30 Minutes will be the heighth and half the height.

Chap. IX. *Of Grubbing up of Woods and Trees.*

THE grubbing up of Woods and Trees may be needful upon the account of their Unthriftineſs, or to plant better Lands for that Purpoſe, and to grub up Roots that are decay'd to make room for them that are more thriving, *&c.* Which, tho' a chargeable Work, yet it may much be leſſen'd by a particular Engine, which I thought it might be of Advantage to make more Publick. It is a very cheap Inſtrument, only made uſe of in ſome particular Places, and will eaſe about a third part of the Charge of this ſort of Labour; it is an Iron-hook of about two Foot four Inches long



long, with a large Iron Ring to it, the ſhape of which you have in the Figure, and may be made for about 3 *s.* 6 *d.* Charge, which they uſe after this manner. Where a Stub of Under-wood grows, they clear the Earth round it where they think any Side-roots come from it, and cut them; which when they have done, in any Hole on the ſides of the Root they enter the Point of the Hook, and putting a long Leaver into the Ring, two Men at the end of it go round till they wring the Root out, twiſting the Tap-roots aſunder, the difficulty of coming at which occaſions the greateſt Labour of this Work. Stubs alſo of Trees may be taken up with it; in which Work it ſaves a great deal of Labour, tho' not ſo much as in the other, becauſe the Stubs muſt be firſt cleft with Wedges before you can enter the Hook in the ſides of it to wrench it out by pieces.

Chap. X. *Of Seaſoning of Timber.*

TIMBER being fell'd and ſawn, is next to be ſeaſon'd: For doing of which, ſome adviſe that it be laid up very dry in an airy place, yet out of the Wind or Sun; others ſay, it ought to be free from the Extremities of the Sun, Wind and Rain: And that it may not cleave, but dry equally, you may daub it over with Cow Dung. Let it not ſtand upright, but lay it along, one piece upon another, interpoſing ſome ſhort Blocks between them to preſerve them from a certain Mouldineſs which they uſually contract when they ſweat, and which frequently produces a kind of

Fungus, eſpecially if there be any ſappy parts remaining.

Others adviſe to lay Boards, Planks, *&c.* in ſome Pool or running Stream; or, which is better, in Salt-Water for a few days, to extract the Sap from them, and afterwards to dry them in the Sun or Air; for by ſo doing (ſay they) they will neither chap, caſt, nor cleave: Mr. *Evelyn*, particularly, commends this way of Seaſoning of Fir, but againſt Shrinking there is no Remedy.

Some again commend Buryings in the Earth, others in Wheat; and there be Seaſonings of the Fire, as for the ſcorching and hardning of Piles which are to ſtand either in the Water or the Earth.

Sir *Hugh Plat* informs us, that the *Venetians* uſe to burn and ſcorch their Timber in the flaming Fire, continually turning it round with an Engine till they have gotten upon it a hard black coally Cruſt; and the Secret carries with it great probability, for that the Wood is brought by it to ſuch a hardneſs and drineſs, that neither Earth nor Water can penetrate it. “I my ſelf (ſays Mr. *Evelyn*) “remember to have ſeen Charcoal dug out of the “Ground, amongſt the Ruins of ancient Buildings, “which have in all probability lain cover'd with “Earth above 1500 Years.

For Poſts and the like that ſtand in the Ground, the burning the Out-ſides of thoſe Ends that are to ſtand in the Ground, to a Coal, is a great Preſervative of them. Sir *Hugh Plat* adds, “That “a *Kentiſh* Knight of his Acquaintance did uſe to “burn (in this manner) the Ends of the Poſts for “Railing or Pailing: And this was likewiſe practis'd with good ſucceſs by a *Suſſex* Gentleman, *Walter Burrell* of *Cuckfield*, Eſq;

This burning of the ends of Poſts is practis'd in *Germany*, as appears by the Abſtract of a Letter written by *David Vonderbeck*, a *German* Philoſopher and Phyſician at *Minden*, to Dr. *Largelott*, regiſtred in the *Philoſophical Tranſactions*, Numb. 92. Pag. 1585. in theſe Words: "Hence alſo they "ſlightly burn the ends of Timber to be ſet in the "Ground, that ſo by the Fuſion made by Fire the "Volatile Salts (which by acceſſion of the Moiſture "of the Earth would eaſily be conſum'd to the Cor-"ruption of the Timber) may catch and fix one "another.

Chap. XI. *Of Preſerving of Timber.*

WHEN Timber or Boards are well ſeaſon'd or dried in the Sun or Air, and fix'd in their places, and what Labour you intend is beſtow'd upon them; the uſe of Linſeed Oil, Tar, or ſuch Oleaginous Matter, tends much to their Preſervation and Duration. *Heſiod* preſcribes to hang your Inſtruments in Smoak to make them ſtrong and laſting: Surely then the Oil of Smoak (or the Vegetable Oil, by ſome other means obtain'd) muſt needs be effectual in the Preſervation of Timber alſo. *Virgil* adviſes the ſame.

The Practice of the *Hollanders* is worth our notice; who, for the preſervation of their Gates, Portcullis, Draw-bridges, Sluices, and other Timbers expos'd to the perpetual Injuries of the Weather, coat them over with a mixture of Pitch and Tar, upon which they ſtrew Cockle and other Shells, beaten almoſt to Powder, and mingled with Sea-ſand, which incruſts and arms it after an incredible manner againſt all the Aſſaults of Wind and Weather.

When Timber is fell'd before the Sap is perfectly at reſt (ſays Mr. *Evelyn*) it is very ſubject to the Worm: And to prevent and cure this in Timber, I recommend the following Secret as moſt approv'd.

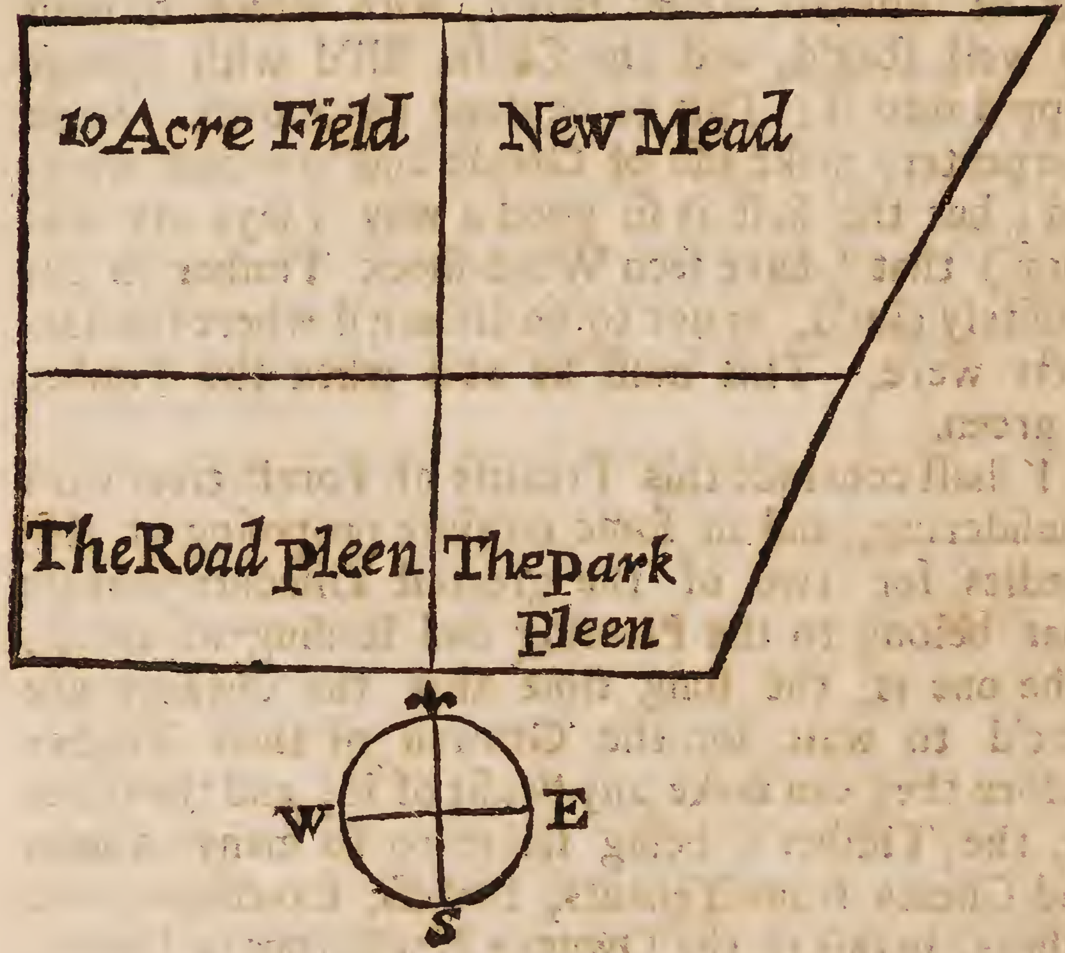
Let common yellow Sulphur be put into a Cucurbit-glaſs, upon which pour ſo much of the ſtrongeſt *Aqua-fortis* as may cover it three Fingers deep. Diſtill this to Drineſs, which is done by two or three Rectifications: Let the Sulphur remaining at the bottom (being of a blackiſh or ſad red Colour) be laid on a Marble, or put into a Glaſs, where it will eaſily diſſolve into Oil. With this anoint what Timber is either infected with Worms, or to be preſerv'd from them. It is a great and excellent *Arcanum* for tinging the Wood, of no unpleaſant Colour, by no Art to be waſh'd out, and ſuch a Preſervative of all manner of Woods, nay of many other things alſo, as Ropes, Cables, Fiſhing-nets, Maſts, or Ships, *&c.* that it defends them from Putrefaction either in Waters or above the Earth, in Snow, Ice, Air, Winter, or Summer, *&c.*

It were ſuperfluous to deſcribe the Proceſs of making the *Aqua-fortis*; it ſhall ſuffice to let you know, that our common *Coperas* makes this *Aqua-fortis* well enough for our Purpoſe, being drawn over by a Retort: And for Sulphur, the Iſland of St. *Chriſtopher*'s yields enough (which hardly needs any refining) to furniſh the whole World. This Secret (for the Curious) I thought not fit to omit, tho' a more Compendious way may ſerve the turn. Three or four Anointings with Linſeed Oil has prov'd very effectual. It was experimented in a Wallnut-tree Table, where it deſtroy'd Millions of Worms immediately, and is to be practis'd for Tables, Tubes, Mathematical Inſtruments, Boxes, Bedſteads, Chairs, *&c.* Oil of Wallnuts will doubtleſs do the ſame, and is a ſweeter and better Varniſh. But Oil of Cedar, or that of Juniper, is commended above all.

Chap. XII. *Of cloſing Chops and Clefts in green Timber.*

GREEN Timber is very apt to ſplit and cleave after it is wrought into Form, which in fine Buildings is a great Eye-ſore: But to cloſe the Chops and Clefts I find this Expedient to do well; which is to anoint and ſupple it with the Fat of Powder'd-Beef Broth, with which it muſt be well ſoak'd, and the Chaſm fill'd with Sponge dipp'd into it: This to be done twice over. Some Carpenters make uſe of Greaſe and Saw-duſt mingled; but the firſt is ſo good a way (ſays my Author) that I have ſeen Wind-ſhock Timber ſo exquiſitely clos'd, as not to be diſcern'd where the Defects were. This muſt be us'd when the Timber is green.

I ſhall conclude this Treatiſe of Foreſt-trees with conſidering, and in ſome meaſure propoſing of Remedies for two of the greateſt Diſcouragements that belong to the Planting and Raiſing of them: The one is, the long time that the Owners are forc'd to wait for the Growth of their Timber before they can make any Profit of it; and the other is, the Timber's being liable to ſo many Abuſes and Cheats from Tenants, Bailiffs, Executors, and others, in caſe of the Owner's Negligence or Death; eſpecially if they are forc'd to leave their Wood to a young Heir. Now as to the firſt Objection, if the Timber is thriving there is no Stock you can have Money in that will turn to better Account, tho' you ſtay long for it; nor any thing that it can be better ſecur'd in, which I think will make amends for the Stay. And as for the ſecond Objection, which I think the moſt material, and the greateſt Inconveniency and Diſcouragement to Planting and raiſing of Timber of any; if I can propoſe a Method for the taking an exact Account of the Timber-trees, both in Hedges and Woods, I ſhall wholly anſwer that Objection and Inconveniency too: For the doing of which, firſt, in Hedgerows you may obſerve this Method. Suppoſe the four Fields underneath to be what you have a mind to take an account of being call'd by the Names of *The* 10 *Acre Field*, *The New Mead*, *The Road Pleen*, and *Park Pleen*, and lying as in the following Map;



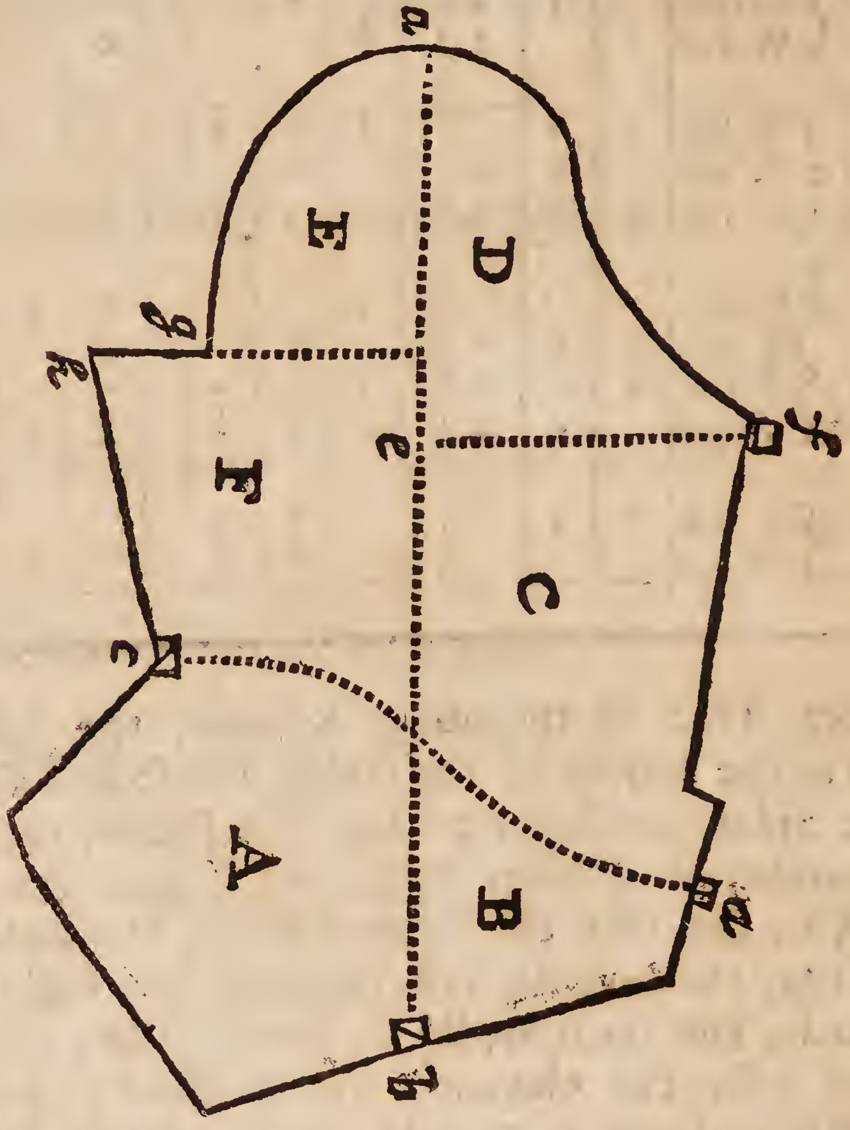
Make a Scheme after the following manner.

Names of the Fields	Side of the Fields	Timber trees			Pollards.			Saplins, or young Trees			
		Oak	Aſh	Elm	Oak	Aſh	Elm	Oak	Aſh	Elm	
10 Acre Field.	N. ſide	10	3	4	6	10	4	10	5	4	
	E. end	5	4	6	3	6	3		2	3	
	S. ſide		5	4		2		1	3	4	
	W. end	4		3	8			6	5	4	
New Mead.	N. ſide	5	3		2	6	5	4			
	E. end		3	4		0		5	4	2	
	S. ſide	3	5	2	2	3	4	6	7	8	
Park Pleen.	N. ſide				5	6		7	5	2	
	E. end	4	3	2		0					
	S. ſide	3	4	2	3	2	2	5	5	6	
	W. end		5	4	2	3	2	4	6	5	
Road Pleen.	S ſide	4	3	2		1	2				
	W. end				5	5	7	8	4	2	

Note, That in the above Scheme, the firſt Column is the Names of the Fields, the ſecond Column is the Sides and Ends of the ſaid Fields, the third the number of Timber Oaks, the fourth the Timber Aſh, the fifth the Timber Elms, the ſixth Oak Pollards, the ſeventh Aſh Pollards, the eighth Elm Pollards, the ninth Saplin or young Oaks, the tenth young Aſh, the eleventh young Elms; and the twelfth Column is to add other ſorts of Trees in, or to ſet down when any are fell'd.

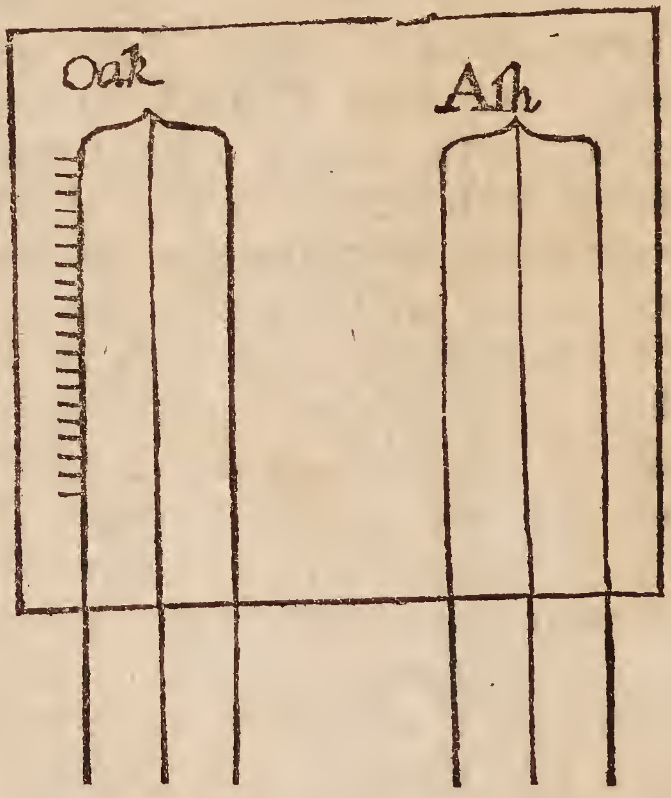
Only 'tis to be obſerv'd, that to the *New Mead* Field is reckon'd but two Sides and only the Eaſt End, becauſe the Ditch being on the *New Mead* ſide, the Hedge-row between that and the *Ten Acre* Field is reckon'd to the ten Acres; and tho' the Hedge-row between the *New Mead* Field and the *Park Pleen* is reckon'd to both, 'tis becauſe there are Trees on the Dools belonging to the *Park Pleen*, and not what Trees are in the Hedge-rows.

For taking an Account of the Number of Trees in Woods, where they are long and narrow 'tis eaſily done when they are fell'd; but where Woods are large, 'tis more difficult: I ſhall therefore propoſe to you the Method I took for the doing of it in a Wood I have that contains about 40 Acres. A Draught of which you have as follows.



Which Wood being too large to fell at once (I not having Woods enough to anſwer ſuch a Fall every Year) and finding my Wood cut in Patches, and other parts of it ſcambled and cut before it was at its Growth; that they might come at what was fit to cut, I reſolv'd to cut a Cart-way through the middle of it, by which means I propos'd three Advantages; firſt, to cut what part of my Wood I would, and to have a clear Cart-way to carry off both my Wood and Timber, which ſaved my Standers and Wood too very much. Secondly, To divide my Wood into two Parts, in order to the counting of my Standards; and thirdly, it being near my Houſe, to have a fine Walk of it; which Cart path in the Map is marked with a prick'd Line from *a* to *b*. But I ſuppoſe I ſhall be ask'd how, in a ſtanding Wood, I could carry the Path ſo ſtraight, and keep the middle of the Wood from one end to the other? For the doing of which, the Method I took was this: I drew on the Map the Line *a b*, and taking of the Angle on the Map at *a*, I ſet my plain Table to that Angle, and by my Sight I directed a Workman to cut a narrow Path, of about two Foot wide, and about ſeven or eight Yards into the ſtanding Wood, and then I ſtuck up two Sticks of equal heighth, on the top of which I made a ſmall Slit, and ſtuck a ſmall piece of white Paper in them, and then order'd the Workman to go into the ſtanding Wood as far as he could, through the Boughs, ſee the white Papers, and then to cut his way out to them; and this he repeated doing till he was ſo far off the firſt Stakes as not to diſcern them well, and then I ſet up another Stake in the ſame manner to range with the firſt, and continu'd adding of one Stake after another till he got through to the Wood's end: This is the way of their cutting their Glades in *Hertfordſhire*, which hit as near the middle as you ſee it laid down in the Draught: This, as I ſaid before, divided my Wood into two parts; and from the Gate at *c* to the Stile at *d* was a Foot-path, which I marked likewiſe with a prick'd Line, which made in the Wood the two Diviſions of *A* and *B*. And having ſome Woods adjoining to this Wood at *f*, I was obliged to make another Cart-way from *e* to *f*, which made the Diviſions of *C* and *D*: And from the Foot-path *c d*, being too large a Diviſion, to leſſen it I made ſeveral ſmall Hills, in which I ſtuck Stakes to run parallel with the corner of the Wood *g h*, which made the Diviſions *E* and *F*. By which means I divided my Wood into ſix Parts, which afforded me a part to fell every Year, and gave me an opportunity of cutting the Trees in each Diviſion as I fell'd them, which I did after this manner.

My Wood conſiſting only of Oak and Aſh, I divided my Trees into three ſorts, *viz.* firſt Storers, which I reckon'd all to be that were under 12 Inches girt; ſecondly, Saplins, which I called all under 24 Inches girt; and what was two Foot girt or above, a Yard from the Ground, I reckoned Timber-trees: And taking of a Slate, I drew ſix Lines after this manner; and taking of one with me with a Paper rul'd after the ſame manner, and a piece of Chalk, a black Lead Pencil, and a Line with two Knots in it, one of 12 Inches long, and the other of 24 Inches; thoſe Trees that we were not certain of being under the Meaſure mention'd he meaſur'd, and as he counted the Trees he drew a Chalk-line about them, which ſhew'd us which we told, that we might not tell them again: And as he told them I ſcor'd on the firſt Line the Oak Storers, on the ſecond Line the Saplins, and on the third Line the Timber Oaks, obſerving the ſame Method with the Aſh; and when



when I had ſcor'd twenty on any of the Lines, I rubb'd out my Scores on the Slate, and with my Pencil I ſcor'd one on the Paper for one Score. And the Diviſions of *A* and *B* being all the Wood that was fell'd at preſent, when I came home I found my Account of thoſe two Diviſions as follows, which I ſet down in the following Method; that I think will be Direction enough for this or any other Woods that you ſhall have occaſion to take an Account of.

An Account of the Number of Trees in the ſeveral Diviſions of my Wood, called The Great Wood, *taken in the Year* 1705.

	OAKS.			ASH.		
N.	Storers	Saplin	Timber	Storers	Saplin	Timber
A.	150	110	50	50	40	60
B.	50	60	55	115	45	40

And tho' this Exactneſs may ſeem more nice than is neceſſary, yet no one knowing whoſe Hand he may fall into, it may be of Advantage, the Pains being very little, eſpecially ſince I have my ſelf, with only one to help me, taken an Account of three Acres of Wood Land in an hours time, where the Standards have been very thick, which I think no very tedious Buſineſs; but I ſhall leave every one to do as they ſee moſt convenient, and proceed to give ſome account of the *Kitchen Garden.*

BOOK XIII.

Chap. I. *Of ſuch Herbs, Roots and Fruits as are uſually planted in the* Kitchen Garden, *or* Olitory.

I Have already ſhewed the Huſbandman how to order his Paſture, Arable and Wood Land; and what I have now to treat of, is the *Kitchen-Garden* and the *Orchard*, which are parts of Huſbandry of no ſmall Advantage to the Induſtrious Farmer; and for the quantity of Ground that the *Kitchen-Garden* takes up, there is no part of his Land that will turn to better Advantage than what is improved this way, it being a great deal of Meat and Corn that is ſav'd by Beans, Peas and Roots; and likewiſe a great deal of Barley, where is plenty of Cyder, beſides the Advantage that Fruit brings by what may be ſold to neighbouring Towns, and the Cyder that might come to be exported to Foreign Parts, if we would attain to a true Perfection in the Art of making this profitable Liquor; but of theſe things hereafter. I ſhall at preſent only give Directions for the *Kitchen-Garden*; in firſt ſhewing what is the beſt Situation and Figure for a *Kitchen-Garden*: Secondly, How to order the Ground-Beds, *&c.* for this uſe, that being the Foundation of the Work. And thirdly, Give a Catalogue of ſuch uſeful Herbs, Roots and Fruits (as are therein to be cultivated) in an Alphabetical manner; which I think will be the readieſt way to find any particular ſorts of Garden Commodities that ſhall be deſired, and will be much better than the ranking of them under their ſeveral Kinds or Species. And therefore, Firſt, As to the Situation of the *Kitchen-Gardens*, *Situation.* ſmall Valleys or low Grounds are beſt, becauſe commonly ſuch Places have a good depth of Earth, and are fatned by the neighbouring Hills, eſpecially if they are not expoſed to Inundations, and afford good Water; but as for Fruit-Trees, a Ground moderately dry (provided the Soil be rich and deep) is the beſt; and for the Poſition, if the Earth be ſtrong, and conſequently cold, the South Aſpect is the beſt; but if it be light and hot, the Eaſt is to be preferr'd. The Southern Aſpects are often expoſed to great Winds from the middle of *Auguſt* to the middle of *October*; the Eaſtern is ſubject to the North-Eaſt Winds, which withers the Leaves and new Shoots, eſpecially of Peach Trees; and the Weſtern to the North Weſt Winds, which brings Blites in Spring, and ſtrong Gales in Autumn, which commonly ſhakes off the Fruit before it is ripe: But as all Poſitions have their Perfections and Imperfections, care muſt be taken to make what Advantage we can of the firſt, and to uſe our beſt Skill to defend our ſelves from the laſt.

The beſt Figure for a *Kitchen-Garden*, and moſt *Figure.* convenient for Culture, is a Square of ſtraight Angles, being once and a half or twice as long as broad; for in Squares the moſt uniform Beds may be made; the Walls ought alſo to be well furniſhed with Fruit-Trees, to be of a good heighth, and placed ſo as to afford good ſhelter on all ſides; the Beds, Plats and Borders to be ſet with all ſorts of things neceſſary for all Seaſons of the Year, and to have the Walks clean, of a proportionable largeneſs, and to afford as much variety as the place will admit of.

Secondly, For the way of managing and ordering *Land to order.* of Land for this Purpoſe; as in all other ſorts of Husbandry, ſo in this you are to conſider the nature of the Soil, and what is moſt proper and beſt to make an addition to its Goodneſs; of which Particulars I have treated already, only it is to be noted, that as your *Kitchen Garden* is to afford great variety of Plants, Roots, Herbs, *&c.* your Soil muſt be made more rich than for Corn, moſt Garden things requiring a richer Soil, if you deſign to have them proſper well; if you meet with Ground that is naturally good and moiſt (which is the beſt for Garden-ground) it is a great Advantage, and much leſſens the Expence; but Land is very rarely found that doth not require a great deal of Labour, tho' it may not want Manure; for many times the Surface of the Earth ſhall be good, which (being opened a Spit deep) will be found to afford only a cold Clay bottom; which is a much more pernicious Soil for Trees and Garden-ware than Gravel it ſelf, becauſe in Gravel, eſpecially if any thing inclin'd to Springs, the Roots of Trees, *&c.* often meet with ſome ſmall Veins, whence they draw Nouriſhment; whereas the Clay, in dry Years eſpecially, is ſo hard, that the Roots cannot penetrate it, and binds ſo firm, that it hinders the moiſture that falls upon it from ſinking through, and ſo cauſes the Roots to ſtand too moiſt in Winter, and ſcorches them with too much heat in the Summer.

To redreſs this defect, the only expedient is, to break up this ſort of Land as deep and no deeper than the Earth is good, beginning with a Trench four or five Foot broad, the whole length or breadth of the place, caſting the ſeveral Moulds all upon one ſide; and into your bottom, when your Trench is empty, caſt in long Dung, or, which is much better, Fern, Leaves of Trees, rotten Sticks, Weed, or any ſort of Traſh you can procure with the moſt Eaſe and leaſt Charge, to rot and keep the Ground from binding.

This Traſh ſhould be laid at the bottom about half a Foot thick, and after that fling upon it your top Spit, caſting the Mould which lies uppermoſt (and which is ever beſt) upon the Dung, and ſo making the ſecond Trench as the former, you ſhould fill your firſt Trench ſo as that the Mould which you found undermoſt ſhould now lie on the top; and thus you muſt continue to do till you have finiſh'd the whole Work.

But it may be here objected, that the Earth which you take from beneath will be barren and unfruitful, which indeed it will for the firſt Year, but being expoſed to the Air, Rains and Froſt of one Winter, it will be ſo mellow as to make it fruitful, eſpecially if any thing of Dung be added to it; but if it prove any thing churliſh, an addition of drift Sand will quickly looſe the binding quality of it; and if it is cold Land, Smiths Aſhes, or other Aſhes, if you live near Towns where they are to be had, will be the beſt Manure for it; Pidgeons, Fowls and Sheeps-dung are alſo very good for all ſorts of cold Land. But 'tis to be obſerv'd, that rich Soils produce large, fair Fruit, and Clay and Chalky Lands the beſt taſted, and moſt laſting.

Time of Trenching.

The beſt time for the trenching up of Land is the beginning of Winter, when the Ground is moiſt and eaſie to dig; but as there are two Seaſons of the Year to ſow and plant Herbs, ſo there are two times to bring Gardens into order, which is the Autumn and the Spring; the firſt Labour being to be beſtow'd about the beginning of *November*, upon ſuch Ground as you deſign to ſow in the Spring, and to dig in the Month of *May* ſuch Ground as you deſign for an Autumnal Sowing, that the cold in Winter, and the heat in Summer, may have an opportunity to make the Clods ſhort and brittle, to turn them into Duſt, and to kill the unprofitable Weeds.

But where you meet with a gravelly bottom, you ſhould husband it as is already preſcrib'd, and the Stones which are mingled with the Earth ſhould be carry'd out; but in caſe the Gravel lie not very thick, and that when it is broke up, you meet with Sand or ſmall looſe Gravel, it may do without flinging it out of the Trenches, becauſe the Trees, by help of the Dung, will ſtrike Root in it.

And tho' theſe are chargeable ways of ordering of Gardens, yet it is done once for all, and the Charge will be abundantly anſwered in the Growth of what Plants you ſet in it, eſpecially for Fruit or other Trees that root downwards; but ſome are more curious, in that they Skreen all the Earth with which they fill their Trenches; but that is needleſs for the whole Garden, particular Beds on which you deſign to raiſe particular Seeds or Plants being ſufficient to be ſo ordered.

Of Manure. Beſides which, you muſt have an equal Compoſition or mixture of Dung and Earth alway ready in ſome corner of your Garden to be laid by, that it may be throughly rotten and turned to good Mould againſt Spring, to renew the Earth with about your Artichoaks, and for the planting and ſowing of Colliflowers, Cabbages, Onions, *&c. vid.* the Culture of *Orchards.*

Laying out of Beds. And for each ſort of Seed and Plants it will be neceſſary to lay out particular Beds, which may be the more or leſs in Number, according to the variety of Seeds you have to ſow, and Herbs to plant, and which ought not to be wider than you can reach croſs; that you may, by Paths left between them, come to weed them, and rake them fine; which is the beſt way of ſowing Seeds, *&c.*

Seeds to ſow. The ſureſt way to have the moſt Advantage of your Dung or Soil, and to have Seeds proſper, that they may come up moſt even, and be all buried at one certain depth, is thus; Firſt rake your Bed even, then throw on a part of your mixture of Earth and Dung; which alſo rake very even and level, on which ſow your Seeds, whether Onions, Leeks, Lettice, or ſuch like; then with a wide Sieve ſift on the Earth mixed with Dung about a quarter of an Inch thick, or a little more, and you ſhall not fail of a fruitful Crop.

Shelter. If your Garden be expoſed to the cold Winds, which are very injurious to moſt ſorts of Plants: Next unto Trees, Pales, Walls, Hedges, *&c.* the beſt ſhelter is to lay your Ground after this following manner, that is, Let it be laid up in ridges a Foot or two in heighth, ſomewhat upright on the back or North-ſide thereof, and more ſloping to the South-ſide, for about three or four Foot broad, on which ſide you may ſow any of your Garden Tillage; theſe Banks lying one behind the other will much break the Winds, and theſe ſhelving ſides will much expedite the ripening of Peas and other Fruits, by receiving more directly the Beams of the Sun; in caſe the Ground be over-moiſt you may plant the higher, and if over-dry, then the lower; ſo that it ſeems to remedy all extreams except Heat, which rarely injures. Plants newly brought from a hotter Climate than where you plant them, ripen later than thoſe uſed to it, as thoſe brought from a colder Climate ripen ſooner.

Hot Beds. To make a hot Bed, in *February* or earlier, for the raiſing of Melons, Cucumbers, Radiſhes, Colliflowers, or any other tender Plants or Flowers, you muſt provide a warm place, defended from all Winds by being incloſed with a Pale or Hedge made of Reed or Straw about ſix or ſeven Foot high, of ſuch diſtance or capacity as your Occaſion requires, within which you muſt raiſe a Bed of about two or three Foot high, and three Foot over of new Horſe-dung of about ſix or eight Days old, treading it down very hard on the top, make it level; and if you will you may edge it round with Boards or Bricks, laying of fine, rich Mould about three or four Inches thick on it; and when the extream heat of the Bed is over, which you may perceive by thruſting in your Finger, then plant your Seeds as you think fit, and erect ſome Forks four or five Inches above the Bed, to ſupport a Frame made of Sticks and covered with Straw or Baſs-mat to defend the Seeds and Plants from cold and wet; only you may open your covering in a warm day for an hour before Noon, and an hour after. Remember to earth up your Plants as they ſhoot in heighth, and when they are able to bear the cold you may tranſplant them, and the Dung of your hot Beds, when done with, will be of great uſe to mend your Garden.

Watering. Many curious and neceſſary Plants would ſuffer were they not carefully watered at their firſt removal, or in extream dry Seaſons, therefore this is not to be neglected early in the Spring; but whilſt the Weather is cold be cautious of watering the Leaves of the young and tender Plants, and only wet the Earth about them.

When your Plants or Seeds are more hardy, and the Nights yet cold, water in the Forenoons; but when the Nights are warm, and the Days hot, then the Evening is the beſt time.

If you draw any Water out of Wells or deep Pits, it ought to ſtand a Day in the Sun in ſome Tub or ſuch like, for your tender Plants in the Spring, before you uſe it.

But Pond, River or Rain-water needs it not, and is to be preferr'd before Well or Spring-water.

If you infuſe Pidgeons-dung, Sheeps-dung, Hens-dung, Aſhes, Lime, or any fat Soil, or other Matter in your Water, either in Pits, Ciſterns or other Veſſels for that Purpoſe, and therewith cautiouſly water your Plants, it will much add to their encreaſe.

For *Colliflowers*, *Artichoaks*, and ſuch like, let the Ground ſink a little round the Plant in form of a ſhallow Diſh, and the Water will the better and more evenly go to the Roots.

Water not any Plants overmuch, leſt the Water carry away with it the vegetative or fertil Salt, and ſo impoveriſh the Ground, and chill the Plant.

But it is better to water a Plant ſeldom and throughly, than often and ſlenderly; for ſhallow watering is but a deluſion to the Plant, and provokes it to Root ſhallower than otherwiſe it would, and ſo makes it more obnoxious to the extremity of the Weather.

Watering with a Lift.

If you are willing to have the Ground always moiſt about a Plant, place near it a Veſſel of Water, putting therein a piece of Wollen Cloth or Liſt, and let the one end thereof hang out of the Veſſel to the Ground, and the other end be in the Water in the manner of a Crane, cauſing the Liſt or Cloth to be firſt wet; and by this means will the Water continually drop till all be drop'd out of the Veſſel, which may then be renewed, only you muſt obſerve to let the end that hangs without the Veſſel be always lower than the Water in the Veſſel, elſe it will not ſucceed; and if it drop not faſt enough, encreaſe your Liſt or Cloth; if too faſt, diminiſh it.

If the Weather be never ſo dry when you ſow any ſorts of Seeds, water them not till they have been in the Ground 48 Hours, and the Ground ſettled about them, that they may be a little glutted with the natural juice of the Earth, firſt, leſt they burſt by too much Water coming on them at once. Theſe general Rules being obſerved, I ſhall thirdly proceed to the Alphabetical Order promiſed; and begin with

A.

Aleſander.

Aleſander is propagated only by Seed that is oval and pretty big, and a little more ſwelling on one ſide than the other, which bends a little Inwards, ſtreak'd all along and croſs-ways on the Edges between the Sides. It's one of the Furnitures of our Winter Salads, which muſt be whiten'd in the ſame manner as *Wild Endive* or *Succory* at the end of Autumn, its Leaves being cut down, and the Bed wherein it grows covered over with long dry Dung or Straw, skreened ſo cloſe that the Froſt may be excluded from it, whereby the new Leaves that ſpring therefrom will grow white, yellowiſh and tender. It's ſown pretty thin in the Spring, and the Seed gathered the latter end of Summer, and the Plant being hardy, requires not much watering.

Arrach.

Arrach, *Orrach* or *Orage*, is propagated only by Seed, being one of the quickeſt Plants both in coming up and running to Seed, which laſt it doth the beginning of *June*. They ſow it pretty thin, and ſome of it, which is good Seed, ſhould be tranſplanted to a ſeparate Place. Its Leaves are very good in Pottage and Stuffings. It ſhould be uſed as ſoon as it peeps out of the Ground, becauſe it decays quickly; and to have ſome the more early, they ſow it in hot Beds. It thrives very well in all ſorts of Ground, but grows faireſt in the beſt.

Aſparagus.

Aſparagus is a fine Plant for the Kitchen, and was much eſteemed, even in *Pliny*'s time: They are raiſed of Seeds ſown the latter end of *March*, which ſome ſow in the Shell as they grow, that is, four or ſix Seeds together; but the beſt way is to break the Shell, and to beat out the Seed: They muſt be ſown indifferent thin, and about a

Year after, if they are big enough, as they will be if the Ground is good and well order'd; if not, at two Years end at leaſt you may tranſplant them; which is to be done at the end of *March* and all *April*, planting them in Beds about three or four Foot Broad, and raiſed ſomewhat higher than the Path-ways that go between them. Theſe Beds muſt be well prepared by digging firſt about two Foot deep, and four Foot wide, and made level at the bottom; mix very good rotten Dung with the Mould, and fill them up. They are planted at two Foot diſtance in three or four Rows. You muſt forbear to cut them for three Years, that the Plants may be ſtrong and not ſtubbed, for otherwiſe they will be ſmall; but if they be ſpared four or five Years, they will grow as big as Leeks; the ſmall ones may be left, that the Roots may grow bigger, ſuffering thoſe that ſpring up about the end of the Seaſon to run up into Seed, and by this means it will exceedingly repair the hurt that you have done to the Plants in reaping their Shoots. When you have, upon the Winter's approach, cut away the Stalks, the Beds, about the beginning of *November*, muſt be covered with new Horſe-dung four or five Fingers thick; but ſome uſe Earth four Fingers thick, and two Fingers thick of old Dung, which will keep them from the Froſt: The Beds are to be uncovered about the middle of *March*, and good fat Mould about two or three Fingers thick ſpread over them, and the Dung laid in the Alleys or elſewhere to rot, and be fit to renew the Mould with the following Spring.

If the old Roots of theſe Plants be taken up about the beginning of *January*, and planted in a hot Bed, well defended from the Froſt, *Aſparagus* may be had at *Candlemas*; when you cut them, remove ſome of the Earth from about them, leſt the others that are ready to peep be wounded, ed, and let them be cut as low as conveniently may be.

The Beds for this Plant muſt be covered every Year with a little Earth taken off from the Pathway, becauſe they, inſtead of ſinking, are always riſing by little and little; and every two Years they are to be moderately dunged: About *Michaelmas* the Stems muſt be cut down, and the faireſt taken for ſeed; and to make them come to bear, an Iron Fork (the Spade being dangerous) is to be uſed to draw them out of the Nurſery Bed. And you muſt not fail every Year, at the latter end of *March*, or beginning of *April*, to beſtow a ſmall dreſſing or ſtirring of the Ground about three or four Inches deep on every Bed (taking care not to let the Spade go too deep, ſo as to hurt the Plants and to render the Superficies of the Earth looſe) the better to diſpoſe it to drink up the Rain and *May-dew*, which nouriſhes the Stocks, and facilitates the Paſſage of the *Aſparagus*, and kills the Weeds. The worſt Enemies to this Plant are a ſort of Flea that faſtens upon its Shoots, and makes it miſcarry; againſt which miſchief there has been yet no remedy found out; if they are planted in good Ground, they may ſtand 10 or 12 Years.

Artichoak

Is by ſome eſteemed one of the moſt excellent Fruits of the *Kitchen-Garden*, and recommended, as upon other Accounts, ſo for that its Fruit continues in ſeaſon a long time. They delight in a rich deep Soil, and not very dry. The Ground for them muſt be very well prepared and mixed ſeveral times with good Dung, and that very deep. The Slips that grow by the ſide of the old Stumps taken from them at the time of their dreſſing in the Spring ſerve for Plants, which are to be ſet in *April*, and kept watered till they are firmly rooted. And theſe, if they be ſtrong, will bear Heads the *Autumn* following; which Off-ſets, to be good, ſhould be white about the Heel, and have ſome little Roots to them. Sometimes *Artichoaks* are multiply'd by the Seed which grows in the *Artichoak* bottom, when they are ſuffered to grow old to flower, and to grow dry about *Midſummer*.

For the Planting of them they commonly make little Trenches or Pits about half a Foot deep, which they fill with Mould, placing the Roots of them by a Line chequerways. If the Soil be rich, the diſtance muſt be three or four Foot, but if not then nearer. All their other Culture till Winter is only weeding, and a little watering if the Spring be dry; but upon the approach of the Winter, for their ſecurity againſt Froſt, be ſure to cut the Leaf within a Foot of the Ground, and raiſe Earth about them in the form of a Mole-hill within two or three Inches of the top, and then cover it with long Dung, which ſecures them alſo againſt the Rain: But others put long Dung about the Plant, leaving a little hole in the middle, and this does very well. An Earthen Pan with a Hole at the top is uſed by ſome; a Bee-hive is better; but the moſt uſual way is to cut their Leaves about *November*, and to cover them all over with Earth, and to let them lie in that manner till the Spring; but if this be done too ſoon it may rot them when they come to be uncover'd, and therefore it muſt be done regularly, at three ſeveral times, at about four days Interval, leſt being yet tender the cold Air ſpoil them. Take off all the old Slips, and leave not above three of the oldeſt to each Foot for the Bearers, and a ſupply of good fat Mould muſt be given to the Roots as deep as conveniently may be. The whole Plantation of them ſhould be remov'd in five Years, tho' they will laſt much longer in a good deep Mould.

In order to have Fruit in *Autumn*, it is neceſſary the Stem of ſuch as have born Fruit in the Spring ſhould be cut off to prevent a ſecond Shoot, and theſe luſty Stocks will not fail of bearing very fair Heads, provided they be dreſſed well and watered in their neceſſity, and the Slips that grow on the ſides of the Plants (which drain all their Subſtance) taken away.

The Stalk is blanched in *Antumn*, and the Pith eaten raw or boiled: The way of preſerving them freſh all Winter, is by ſeparating the Bottoms from the Leaves, and after parboiling, allow to every Bottom a ſmall earthen glaz'd Pot, burying it all over in freſh melted Butter, as they do Wild Fowl, *&c.* They are alſo preſerved by ſtringing them on Pack-thread, a clean Paper being put between every Bottom to hinder them from touching one another, and ſo hung up in a dry place: They are likewiſe pickled.

Chards of *Artichoaks*, otherwiſe called *Cuſtons*, are the Leaves of fair *Artichoaks*, ty'd and wrapp'd up in Straw in Autumn and Winter, being covered all over but at the top; which Straw makes them wax white, and thereby loſe a little of their bitterneſs, ſo that when boiled they are ſerved up like true *Spaniſh Cardons*, but yet not ſo good; beſides, the Plants of them rot and periſh during the time of whit'ning them.

For *Artichoaks* you have not only the hard weather and exceſs of wet to fear, but they have the Field-Mice for their Enemies, which by gnawing of their Roots ſpoil them.

There are three ſorts of *Artichoaks*, the *White* ones, which are the moſt early; the *Violet* ones, whoſe Fruit is almoſt of a Pyramidical Figure, being the hardieſt ſort; and the red ones, which are round and flat like the white ones; the two laſt are eſteemed the beſt.

B.

Balm.

Balm is an odoriferous Herb, being multiply'd both by Seed and rooted Branches like *Lavender*, *Hyſſop*, *Thyme*, *&c.* The tender Leaves are uſed with other Herbs for Sallads; the Sprigs freſh gathered put into Wine, or other Drink, during the heat of Summer, give it quickneſs; and beſides, this Plant yields an incomparable Wine made in the ſame manner as Cowſlip, *&c.*

Barberries.

Barberries are raiſed by Suckers, of which you have plenty about the Roots of old Trees, tho' 'tis not good to ſuffer too many Suckers to grow about them; neither let their tops be cut like cloſe round Buſhes, as many do, which makes them grow thick, that they can neither bear nor ripen Fruit ſo well as if they grew higher and thinner. It is a Plant that bears a Fruit very uſeful in Houſewifery, whereof there are ſeveral ſorts, altho' but only one common one; that which beareth its Fruit without Stones is counted beſt; there is moreover another ſort which chiefly differs from the common kind, in that the Berries are twice as big, and more excellent to preſerve.

Baſil.

Baſil is of ſeveral ſorts, as that which bears the biggeſt Leaves, eſpecially if they are of a Violet Colour; but that which bears the leaſt Leaves is moſt Curious, and that which bears the middling ones is the moſt common ſort; all which are propagated by Seed of a black Cinnamon Colour, very ſmall, and a little oval, and by Slips. It is annual and very tender, being ſeldom ſown but in hot Beds, beginning therewith at the beginning of *February*, and continuing ſo to do all the whole Year. Its tender Leaves are uſed in a ſmall quantity with the furniture of Salads, among which they make an agreeable Perfume, the ſame being likewiſe uſed in Ragou's, eſpecially when dry. To make it run to Seed (which is gathered in *Auguſt*) it's uſually tranſplanted in *May*, either in Pots or Beds. This Plant imparts a grateful Savour, if not too ſtrong: It is ſomewhat offenſive to the Eyes, and therefore the tender tops are to be very ſparingly uſed.

Beans.

Beans are of great Uſe and Benefit, of which there are ſeveral ſorts, *viz.* the great Garden-Bean, the middle ſort of Bean, and the ſmall Bean, or Horſe-bean, *&c.* the laſt ſort of which I have treated of already. As for Garden-beans, they are uſually ſet betwixt *November* and *February*, at the Wain of the Moon. But if it happen to freeze hard after they are ſpired, it will go near to kill them, therefore the ſureſt way is to ſtay till after *Candlemas.* It is a general Error to ſet them promiſcuouſly, for being planted in Rows by a Line, at three Foot diſtance, it is evident they bear much better, and may be eaſier weeded, topped or gathered. If they be ſow'd or planted in the Spring, they muſt be ſteep'd two or three Days in Water, and it's beſt to ſet them with Sticks.

In gathering green Beans for the Table, it is the beſt way to cut them off with a Knife, and not to ſtrip them; and after gathering, the Stalks may be cut off near the Ground, and ſo probably a ſecond Crop may riſe before the approach of the Winter.

Beet Raves, or Beet Radiſhes.

Red Beet produces Roots for Salads, being multiply'd only by Seeds of about the bigneſs of a midling Peas, and round, but rough in their roundneſs: They are ſow'd in *March*, either in Beds or Borders, very thin, in good well prepar'd Ground, or elſe they will not grow ſo fair and large as they ſhould be; they are beſt that have the reddeſt Subſtance, and the reddeſt Tops, and are not good to ſpend but in Winter, their Seed is gathered in *Auguſt* and *September*, for the procuring whereof, ſome of the laſt Years Roots that have been preſerv'd from the Froſt are tranſplanted in *March*, the Roots being cut into thin Slices and boiled, when cold, make a grateful Winter Salad.

Beet White.

White Beet is alſo propagated for Chards by Seeds only, like unto that of the Red Beets, but of a duller Colour; the Rib of it being boiled, melts and eats like Marrow.

Chards of Beet

Are Plants of White Beet tranſplanted in a well prepar'd Bed at a full Foot's diſtance, producing great Tops, which in the midſt thereof have a large, white, thick downy and cotton-like main Shoot, which is the true Chard uſed in Pottages and Entre-meſſes. When White Beets have been ſown in hot Beds, or in naked Earth in *March*, that which is yelloweſt is tranſplanted into Beds purpoſely prepared, and being well watered in the Summer they grow big and ſtrong enough to reſiſt the hard Winter's cold, if ſo be they be covered with long dry Dung, as we do *Artichoaks.* In *April* they are uncovered, and the Earth dreſt carefully about them, and ſo produced; their Seed is gathered in *July* or *Auguſt.*

Borage

Is propagated only by Seed that is black, and of a long oval Figure, commonly with a little white end towards the Baſe or Bottom that is quite ſeparated from the reſt, being ſtreak'd black all along from one end to the other. It grows and is to be ordered in the ſame manner as *Arach*, but it does not come up ſo vigorouſly. It is ſown ſeveral times in one Summer; the Seed falls as ſoon as ever they begin to ripen, and therefore muſt carefully be watch'd, and the Stalks cut and laid a-drying in the Sun, whereby few will be loſt: Its

Flowers ſerve to adorn Salads, but they are not eaſily digeſted, tho' their Leaves are, if their String is firſt taken away.

Bugloſs is order'd after the ſame manner.

Bucks-horn Salad

Is only multiply'd by Seed, which is very ſmall, and is ordered after the ſame manner as Borage. When the Leaves of this Plant are cut, there ſpring up new ones in the room of them.

Burnet.

Burnet is propagated only by Seed that is pretty big, a little oval with four ſides, and as it were all over engraven in the ſpaces between the four Sides. It is a very common Salad, ſeldom ſown, but in the Spring it often ſprings afreſh, after Cutting; the Shoots are for Salads; the ſame requires watering in Summer, at the end whereof the Seeds are gathered.

C.

Cabbage and Coleworts.

Cabbage and *Coleworts*, whereof there are divers ſorts, ſuch as the *Dutch Cabbage*, which is very ſweet and ſoon ripe; the large ſided *Cabbage*, that is, a tender Plant not ſown till *May*, planted out in *July*, and eaten in Autumn; but the beſt *Cabbage* is the *White Cabbage*, which is the biggeſt of all; and the *Red Cabbage*, which is ſmall and low; the *perfumed Cabbage*, ſo named from its ſcent; the *Savoy Cabbage*, which is one of the beſt ſort and very hardy; and the *Ruſſia Cabbage*, which is the leaſt and moſt humble of them, but very pleaſant Food, and quick of growth.

They are raiſed of the Seed ſown between *Midſummer* and *Michaelmas*, that they may gain ſtrength to defend themſelves againſt the violence of the Winter, which yet they can hardly do in ſome Years; or elſe they may be raiſed in a hot Bed in Spring, and tranſplanted in *April*, or about that time, and that into a very rich and well ſtirred

red Mould, if large *Cabbages* are expected. They delight moſt in a warm and light Soil, and require daily watering till they are rooted. But yet great quantities of ordinary *Cabbage* may be raiſed in any ordinary Ground if well digged and wrought.

As for the Seed, if you intend to preſerve it, it muſt be of the beſt *Cabbages*, placed low in the Ground during the Winter, to keep them from cold Winds and great Froſts; they muſt have Earth Pots, or a warm Soil over them for their covering, and be planted forth at Spring.

If your *Cabbages* or *Colliflowers* are troubled with Catterpillars, mix Salt with Water, and water them therewith, and it will kill them.

Camomile.

Camomile double is like the common ſort, only the Leaves greener and larger, and the Flowers, are very double, being white, and ſomewhat yellow in the middle. It is more tender than the common one, and muſt yearly be renewed by ſetting of Slips thereof in the Spring, or parting of the Roots.

Carduus Thiſtle.

Carduus, tho' it is a noiſome Weed, yet ſome of them are received into Gardens, whereof are firſt the greater *Globe Thiſtle* with Leaves cut in, and are gaſhed in the middle full of ſharp Prickles, its branched Stalk above a Yard high, bearing great round hard Heads, with a ſharp bearded Husk of a bluiſh green colour, from whence come pale blue Flowers ſpreading over the whole Head, and are ſucceeded by the Seeds contained in the Husks, which muſt be preſerved, for the Plant dies in the Winter. Secondly, the leſſer *Globe Thiſtle*, whoſe Leaves are ſmaller and whiter, as are the Stalk and Head of the Flowers, the Roots more durable, laſting four Years bearing Flowers.

Their flowering time is uſually in *Auguſt*, and being ſowed of Seeds, they will come to bear Flowers in the ſecond Year; they prove a great annoyance to ſome Lands by killing the Graſs, Corn, *&c.* tho' they be a ſure token of the ſtrength of the Ground. The way to deſtroy them, is to cut them up by the Roots before Seeding-time. Our *Ladies milky dapled Thiſtle* is worth eſteem, for the young Stalk, about *May*, being peeled and ſoaked in Water, to extract the Bitterneſs, either boil'd or raw, is a very wholeſome Salad eaten with Oil, Salt and Pepper; ſome eat them ſodden in proper Broth, or baked in Pies like the *Articboak*, but the tender Stalk boil'd or fry'd ſome prefer; both are nouriſhing and reſtorative.

Carrots.

Carrots are the moſt univerſal and neceſſary Root this Country affords, and hereof there are two ſorts, the Yellow, and the Orange, or more Red; the laſt of which is by much the better. They are raiſed of Seed, and principally delight in a warm, light or ſandy Soil; and if the Ground be ſo, tho' but indifferently fertile, yet they will thrive therein. It's a uſual thing to ſow them with Beans in the Intervals between them, and in digged, not ploughed Lands, becauſe of their rooting downwards; for after the Beans are gone they become a ſecond Crop; and ſome of the faireſt of them being laid up reaſonably dry in Sand, will keep throughout the Winter: The ſame may be reſerved till Spring, and planted for Seed, or elſe Seed may be gathered from the biggeſt aſpiring Branches. They may be ſowed in Autumn or Spring.

Cardon Spaniſh.

Cardon Spaniſh are only propagated by Seed that is of a longiſh oval Form, and about the bigneſs of a Wheat Corn, of a greeniſh, olive Colour, ſtreaked from the one end to the other. They are ſown at two ſeveral times; the firſt from the middle of *April* to the end, and the other time about the latter end of *May*, in a good and well prepared

Ground, in ſmall Trenches or Pits a Foot wide, and ſix Inches deep filled with Mould, and then make for them Beds four or five Foot wide, in order to place in them two Ranks of thoſe Pits chequerways, putting five or ſix Seeds into every Hole, with intention to let but two or three grow, and take away the reſt if they come up: But if in fifteen or twenty days the Seed doth not come up, they ſhould be uncovered, to ſee whether they be rotten, or begin to ſprout, that their Places may be ſupply'd with new ones if need require; they muſt be carefully watered; and towards the end of *October*, if you have a mind to whiten them, take the advantage of a dry Day, firſt to tie up all the Leaves with two or three Bands, and ſome Days after to cover them quite with Straw or dry Litter, well twiſted about them, except at the top, which is to be left open; thus ordered they whiten in about three Weeks, and are fit to eat.

They may be tranſplanted upon the approach of Winter into the green Houſe, removing ſome Earth with them, ſome of which may be planted next Spring to run to Seed in *June* or *July*.

Chervil.

Chervil is only multiply'd by Seed that is black, very ſmall, pretty longiſh, ſtriped longways, and grows upon Plants ſown the Autumn before, which knits and ripens in *June*; the musked ſort thereof is one of our Salad Furnitures; and at the beginning of Spring while the Leaves are tender is very agreeable. It remains many Years without being ſpoiled by the Froſt. As for the ordinary ones for Salads it is annual, and a little thereof ſhould be ſown Monthly, as there is occaſion for it. It runs very eaſily to Seed, and if you would have ſome of it betimes, it muſt be ſown by the end of Autumn; the Stalks are cut down as ſoon as they begin to grow yellow, and the Seed beaten out, as is done by that of other Plants.

Citruls, Pumpions or Pumpkins,

Are propagated only by Seeds of a flat and oval Figure, partly large and whitiſh, and as it were neatly edged about the ſides; there are two ſorts of them, the green and the whitiſh; they are uſually ſown in hot Beds about the middle of *March*, and beginning of *April*; and being taken up with the Earth about them, are tranſplanted into Holes two Foot Diameter, and one deep, and at two Fathoms diſtance, which are filled with Mould; in *June*, when their Vines begin to grow five or ſix Foot long, ſome Shovelfuls of Earth are thrown upon them to prevent their being broken with the Wind, and to make them take Root at the place ſo covered, whereby the Fruit that grows beyond that part will be better nouriſhed, and ſo grow bigger: If the Weather is dry, they ſhould be well watered.

Cives.

Engliſh Cives are multiplied only by Off-ſets that grow round about their Tufts; from them a part is taken to replant, being ſlipt out and ſeparated into many little ones, and tranſplanted nine or ten Inches aſunder, either in Borders or Beds in pretty good Ground: They will laſt three or four Years without removing, or any other Culture than weeding and watering ſometimes during the heat: It is their Leaves only that are uſed for one of the Sallet Furniture.

Cibouls: See *Scallions.*

Clary.

Clary, when tender, is an Herb not to be rejected in Sallets. It's raiſed of the Seed.

Cole-Flower, or Cauly-Flower.

Cole, or *Cauly-Flower* is an excellent Plant, whoſe Seed is ſown in *Auguſt*, and ought carefully to be preſerved over the Winter, by Matts or other cloſe ſhelter; or elſe they may be raiſed in hot Beds in the Spring, by ſowing of the Seeds in *February*, and when they have indifferent large Leaves may be removed into good Lands prepared for that end; tho' the beſt way is to dig ſmall Pits, and fill them with rich light Mould, wherein the *Cole-Flower* muſt be planted, and afterwards carefully watered. Thoſe that are of one Years growth uſually Flower about a time; to prevent which, ſome of the Plants may be removed once a Fortnight, for two, three or four times as a Man pleaſes, and ſo they may be had ſucceſſively one after another; or elſe the Flower may be cut off before it is fully ripe with a long Stalk, and ſet in the Ground, as far as may be, and it will retard its ripening; but it muſt be ſhaded, and have a little watering leſt it wither.

Conval-Lily.

Conval-Lily, *May-Lily*, or *Lily of the Valley*, has a ſtrong Root that runs into the Ground, and comes up in divers Places with three or four long and broad Leaves, and from them riſes a naked Stalk, with white Flowers at the top like Bottles with open Mouths of a comfortable ſweet Scent. There is another ſort differing from theſe only in Flowers, which are of a fine pale red, both of them flowering in *May*, and bearing beſt in a ſhady mean Soil, being eaſily propagated from Plants.

Corn Sallet.

Corn Sallet is an Herb whoſe top-Leaves are a Sallet of themſelves, ſeaſonably eaten all the whole Winter and early in the Spring with other Sallets, it's raiſed of Seed at firſt, but afterwards will Sow it ſelf. *Vid. Maches.*

Creſſes.

Creſſes Garden, *Indian* or *yellow Lark-Spurs.* They are ſown in many Gardens for culinary Uſes; and the latter from a Flower, are now become excellent Sallets as well the Leaf as the Bloſſom; for early Sallets they are raiſed in hot Beds: But if ſown in *April* they will grow very well on ordinary Garden-ground, and their Leaves and Bloſſoms plentifully encreaſe. *Water-Creſſes* are eaten boiled or raw, and like the other ſort of *Creſſes* are raiſed of Seed.

Cucumbers.

Cucumbers are of two ſorts, the large green *Cucumbers*, vulgarly called the *Horſe-Cucumber*, and the ſmall White which is the more prickly *Cucumber*. The firſt are beſt for the Table green out of the Garden; but the other to preſerve. They are planted and propagated after the ſame manner as *Melons*, only they require more watering, and are withal much more hardy; but tho' the watering makes them more fruitful, yet they are more pleaſant and wholeſome if they have but little Water.

Currants.

Currants or *Corinths* firſt took their Names from their likeneſs to the ſmall *Grape* or *Raiſins* which come from *Corinth*. They are raiſed by Suckers or Cuttings ſtuck in moiſt places, of which you may have plenty about the Roots of old Trees, which when they have grown for ſome Years, ſuffer not many Suckers to grow about them. Do not cut the tops to a round cloſe Buſh, as many Gardeners do; whereby they grow ſo thick, that they neither bear nor ripen their Fruit ſo well as if they grew taller and thinner. The *Engliſh* red *Currant* (formerly tranſplanted to *England*) is not now valued, nor yet the black: The white *Currant* till of late was moſt in eſteem, but the red *Dutch Currant* becoming Native of our Soil, has been ſo much improved in moiſt rich Grounds, that it hath obtained the higher Name: Beſides which, there is again another ſort (propagated among us) to be eſteemed only for Curioſity, not for Fruit. Their Culture conſiſts in cutting away the old Wood, and preſerving only that of one or two Years growth; for a confuſed mixture is not only diſagreeable and pernicious, but the old Branches will bear nothing but very ſmall Fruit, till at laſt they quite degenerate; therefore when the Stocks grow old, you ſhould raiſe a Plantation of new ones in ſome other freſh choice piece of Ground, after they have ſtood about ſeven or eight Years.

Currants and *Gooſe-berries* may be inoculated on their own kind.

D.

Dandelion.

Dandelion is an Herb which is macerated in ſeveral Waters to extract the bitterneſs. It is little inferiour to *Succory*, *Endive*, &c. The *French* Country People eat the Roots of it.

E.

Endive white, or Succory.

Endive, or *Succory*, is of ſeveral ſorts, as the white, the green and the curled, which are only propagated by Seed that is longiſh, of a white grey Colour, flat at one end, and roundiſh at the other: It grows upon the Stocks or Stems of the preceeding Years growth, and you would take it but only for little bits of Herbs cut ſmall. The wild is alſo propagated in the ſame manner, from longiſh black Seed; and is a ſort of a very good annual Plant uſed in Sallet and Pottage in Autumn and Winter Seaſons, if ſo be it is well whitened, and ſo made tender. All ſorts of them agree pretty well with any kind of Ground, and are ſeldom begun to be ſown till the middle of *May*, and then very thin, or they muſt be thinned afterwards, in order to be whitened in the place where they firſt grew, without tranſplanting; there is alſo but a little quantity of them to be ſown at once, becauſe they are apt to run into Seed; but for a greater quantity let them be ſown the latter end of *June*, and all *July*, in order to have ſome good to ſpend in *September*; after this a great quantity is ſown in *Auguſt*, for a ſufficient ſupply to ſerve the Autumn and fore-part of the Winter. When they are tranſplanted in Summer time, they muſt be ſet at a large Foot diſtance, and great Beds of five or ſix Foot broad are uſually made for them, to plant them in afterwards in Lines marked out with a Cord; this Plant requires great and frequent waterings, and when big enough to be whitened, it is tied up with two or three Bands according as its heighth requires, and it is whitened in fifteen or twenty Days: but to preſerve it upon the approach of cold, it muſt be covered with long dry Dung, whether it be tied up or not. At the end of *September* the Stocks are planted pretty near one another, becauſe it neither grows ſo high or ſpreads ſo much as in Summer: And in caſe any Plants can be ſaved in Winter, they muſt be tranſplanted again in the Spring, in order to produce Seed, that they may have a ſufficient time to ripen. For the wild Endive it is ſown in *March* pretty thick in a well prepared Ground, and fortified by watering and cropping, that it may be fit to whiten in Winter; the beſt way to whiten which, is to interpoſe ſome Props from ſide to ſide to keep the Dung, wherewith it muſt be well covered, from touching of it. It will ſhoot under a cloſe cover, and therefore care muſt be taken to ſtop up well the Paſſages on all ſides, that no Light or Air at all can get in; for hereby the Roots are much cleanlier, and reliſh not ſo much of the Dung. It may be tranſplanted into Conſervatories in Winter. When it is green it endures the Froſt well enough, and runs into Seed the latter end of *May*. Many People eat its Shoots in Sallets when they are young and tender: It is eaten with *Mint*, *Rocket*, *Tarragon*, and other hot Herbs.

Eſchalots.

Eſchalots are now from *France* become an *Engliſh* Plant, being increaſed and managed after the ſame manner as *Garlick*, which may be ſeen for that purpoſe; only they are to be ſet earlier, becauſe they ſpring ſooner, and taken up as ſoon as the Leaves begin to wither; long after which, they muſt not lie in the Ground, for either they rot there, or the Winter kills them: They give a fine reliſh to moſt Sawces, and the Breath of thoſe that eat them is not offenſive to others; but being planted two or three Years in the ſame Ground they are apt to degenerate.

F.

Fenil.

Fenil is only propagated by Seed that is ſmall, longiſh, oval and ſtreaked with greeniſh grey ſtreaks, it is one of our Sallet-furniture, that is ſeldom tranſplanted, and reſiſts the cold of the Winter if it is ſaved in Beds or Borders; it ſprings again when it is cut, and its youngeſt and tendereſt ſhoots are the beſt: The Seed is gathered in *Auguſt*, and agrees well enough with any ſort of Ground.

French-Beans, or Kidney-Beans.

French, or *Kidney-Beans*, are a ſort of Codware that are very pleaſant, wholeſome Food, being but lately brought in uſe amongſt us, and are not yet ſufficiently known: There are four ſorts thereof. Firſt, The Scarlet-Bean which has a red Husk, and is not the beſt to eat in the Shell, as Kidney-Beans are uſually eaten, but is reputed the beſt to be eaten in Winter when dry and boiled. Secondly, The painted or ſtreaked Beans which are the hardieſt, tho' meaneſt of all. Thirdly, The large white Bean which yields a fair delicate Pod. Fourthly, The ſmall white Bean which ſaving in ſize is like the latter, but eſteemed the ſweeter. They delight in a warm, light and fertile Ground, which being about the beginning of *May*, or very ſoon after, planted with them at a Foot diſtance, and two Fingers deep, will yield an extraordinary Crop: You may either ſet up tall Sticks near for them to twine about, or let them lie on the Ground; but if you are ſtraitned in room, thoſe on Sticks will yield the greateſt increaſe.

G.

Garlick.

Garlick is increaſed by parting of the Cloves or Off-ſets in *February* or *March*, and planting of them in a rich good Soil, in which they will encreaſe wonderfully. Their Leaves about the end of *June*, may be tied in knots, which will prevent their ſpindling, and keeping down of the Leaves will make the Roots large: Much more of this Root would be ſpent for its wholeſomneſs, were it not for the offenſive ſmell it gives to the By-ſtanders, which is taken away by eating of a Beet-root roaſted in the Embers; but yet by *Spaniards* and *Italians*, and the more Southern People, it is familiarly eaten with almoſt every thing, and eſteemed of ſingular Vertue to help Concoction.

Gooſeberries.

Gooſeberries muſt be order'd the ſame way as before is preſcrib'd for *Currants.* They are of ſix ſorts, as white, green, yellow, red, black and ſtrip'd.

H.

Harts-horn: See *Bucks-horn.*

Hyſop.

Hyſop, or *Hyſſope*, is propagated only by Slips.

I.

Jack by the Hedge.

Jack by the Hedge (*Alliaria*, or Sauce alone) is an Herb that grows wild under Banks and Hedges, and has many Medicinal Properties, being eaten as other Sallets are, eſpecially by Country People, and is much uſed in Broth.

Jeruſalem Artichoak: See *Potatoes.*

K.

Kidney-Beans: See *French Beans.*

L.

Lavender.

Lavender is multiply'd by Seed, and old Stocks or Plants tranſplanted, but chiefly by Slips, it ſerves to garniſh Borders of the Kitchen-Gardens, and yields a Flower which is uſed for ſeveral Phyſical Uſes, and to put among Linen to perfume it.

Leeks.

Leeks are raiſed of Seed, as *Onions* are, and ſown about the ſame time: About the Month of *Auguſt* plant them in very fat rich Ground, for which deep Holes are made with a Setting-ſtick, but fill not the Holes with Earth; water them once in two Days with Water, enriched with fat Dung, and they will be very large and white: The beſt for Seed are planted in the ſame manner as *Onions*; and the Seed-bearing Stalks of both muſt be ſupported by Threads or Sticks, otherwiſe they will lean to the Ground.

Lettice.

Lettices of all ſorts are multiplied only by Seed, which being ſown in the Spring, ſeed in *July*; and ſo do the Winter, or Shell *Lettices*, after having paſſed the Winter in the places where they were replanted in *October*; they are the moſt common and uſeful Plant in the Kitchen-Garden, eſpecially for Sallets. There are many kinds of them, as the Cabbage *Lettice*, which with the ordinary Culture comes to Perfection: The Shell *Lettice*, ſo called from the roundneſs of its Leaf, almoſt like a Shell, is the firſt that will Cabbage at the going out of the Winter; otherwiſe called Winter *Lettice*, becauſe they can pretty well endure ordinary Froſts. They are ſown in *September*, and in *October*, and *November*, tranſplanted into ſome Wall-border towards the South and Eaſt; or elſe they are ſown in hot-Beds under Bells in *February* or *March*, and are good in *April* and *May*. Another ſort of *Lettices*, called *Paſſion Lettices*, proſper well in light

Ground, and are ſucceeded by the bright curled *Lettices*, which uſually Cabbage in the Spring, and do alſo well upon hot Beds: Of this ſort there are two others, *viz. George Lettices* that are thicker and leſs curled; and the *Minion* which is the leaſt ſort, and requires good black or ſandy Ground. Near about the ſame Seaſon comes in curled green *Lettices*, beſides the red and ſhort *Lettices* that have ſmall Heads, and require the ſame Ground. In *June* and *July* come on the Royal Bell-gards, or Fair Looks, Bright *Genoas*, *Capuchins*, *&c.* to whom frequent Rains are pernicious: Others are called Imperial *Lettices* from their ſize, delicate in taſte, but apt to run into Seed. But to have no more diverſities, the great Inconveniencies that befal Cabbage *Lettices* are, that they often degenerate ſo far as to Cabbage no more, and therefore no Seed ſhould be gathered but from ſuch as do Cabbage well, and as ſoon as they are Cabbaged they muſt be ſpent, unleſs you would have them run unto Seed without doing any Service: For if the rot that begins at the end of the Leaves ſeizes them, which it will often do when the Ground or Seaſon is not favourable unto them, there is hardly any remedy; only the Ground that is faulty may be mended with ſmall Dung, whether it be ſandy or cold groſs Earth.

Thoſe *Lettices* which grow biggeſt ſhould be placed at ten or twelve Inches diſtance, and for thoſe that bear Heads of a middling ſize, ſeven or eight will do; and ſuch as would be good Husbands may ſow *Radiſhes* in their *Lettice* Beds, for they will be all drawn out and ſpent before the *Lettice* Cabbage; and for the ſame reaſon, *Endives* being much longer before they come to Perfection than the *Lettices*, ſome of theſe laſt may be planted among the *Endives*. You may alſo blanch the largeſt Roman *Lettices*, when they are at their full growth, by binding of them up with Straw, or raw Hemp, or by covering of them with Earthen Pots, that have Dung put about them.

Lily.

Of this Plant three are divers kinds. Firſt, The fiery red Lily that bears many fair Flowers on an high Stalk of a fiery red at the top, but towards the bottom declining to an Orange colour with ſmall black Specks. Secondly, The double red Lily having Orange coloured ſingle Flowers with little brown Specks on the ſides, and ſometimes but one fair double Flower. Thirdly, The Yellow Lily which is the moſt eſteem'd of any, being of a fine Gold colour. Fourthly, The common White one like the common Red. Fifthly, The White Lily of *Conſtantinople*, ſmaller every way than the laſt, but bears a great many more Flowers. Sixthly, The double white Lily in all things like the common, except the Flowers which are conſtantly double, ſeldom opening at all but in a fair Seaſon. Seventhly, The *Perſian* Lily rooted like the Crown Imperial, beſet with whitiſh green Leaves to the middle, and thence to the top, with many ſmall Flowers hanging their Heads of a dead purple Colour, with a Pointil, or Chives, in the middle, tipt with yellow Pendants. Theſe (ſave the laſt which Flowers in *May*,) put forth their Flowers in *June*. All of them are increas'd by the Roots, which hold their Fibres, and therefore like not often removing but when there is Occaſion. The beſt time is when the Stalks are dried down, for then the Roots have the feweſt Fibres, and ought to be ſet five Inches deep in the Earth, and uncovered to the bottom every Year, that without ſtirring the Fibres of the old Roots, the young ones may be parted from them, and they only remain with new rich Earth put to them and covered; which will much advantage the fairneſs and number of their Flowers. See *Conval Lily.*

M.

Maches.

Maches or Maskets are multiplied only by Seed, which is very ſmall, and of an Orange Colour, they being a ſort of little Sallet, which is term'd wild or ruſtical. Beds are made for them, which are ſowed about the end of *Auguſt*, they are hardy enough to reſiſt the rigour of Froſts; and foraſmuch as they produce a great many little Seeds that will eaſily fall, they will ſufficiently propagate themſelves without any other Culture than only weeding.

Marjoram.

Of Marjoram there are ſeveral ſorts which are eaſily raiſed of Seed ſown in *May*; the vulgar ſort and Pot Marjoram is raiſed by Slips, whoſe uſes are commonly known: There is alſo a diſtinction of Winter Marjoram, which is the beſt, and Summer Marjoram that laſts only that Seaſon: It is alſo propagated by Slips or Suckers in *April.*

Melons.

Melons, or Musk-melons, as they are uſually called from their pleaſant ſcent, are a Fruit raiſed for pleaſure in the Summer time, and diſtinguiſhed by ſeveral Names: Thoſe the moſt uſually known are the large ribbed Melon, and the ſmall round Melon, the Seeds being firſt ſteeped in Milk for twenty four Hours. They are ſown in *February* at the Full of the Moon, ſetting two or three in a hole about an Inch deep in a hot Bed, as is directed before.

Towards the end of *April* the Melon Plants are to be removed out of the hot Bed, into the Beds, where they are to grow all Summer, which Beds, or at leaſt ſome large Holes in them, are to be filled with a rich light Mould, only you muſt be careful to prevent both the Roots and Plants touching of the Dung, and to water them moderately; and that only when the Earth is very dry and hot; which repeat the doing of in ſuch Weather about two or three times in a Week. If too much Rain fall, they ſhould be covered, becauſe either too much wet, or too much drought is prejudicial to them; the beſt time for removing of them is in an Evening after a fair Day, when they muſt be watered and defended from the Sun and Cold, for three or four Days together. They may be covered when grown large with Glaſs Bells, or ſquare Caſes of Glaſs made on purpoſe, which muſt be kept cloſe at Night with ſome admiſſion of Air under the Glaſs, or at the top in the Day time; the Leaves muſt not be wet in watering, and a Tile may be placed under each Melon that it may lie the warmer upon it, and the ſmall Shoots that do extract the Sap of the moſt leading Branches muſt be nipt off, taking care to leave not above three or four of the moſt vigorous Branches, whoſe knots grow neareſt to one another. When your Fruit is grown as big as a Tennis-ball, nip off the Shoot at ſome diſtance beyond them, and they will grow large, provided you ſuffer not above two upon each Foot, chuſing ſuch as are neareſt the principal Stem, the reſt being of little value.

They are known to be ripe when the Stalk ſeems as if it would part from the Fruit, when they begin to gild and grow yellow underneath, and by the fragrant Odour they yield, which encreaſes more as they ripen; but if they be to be carried far, it is neceſſary they be gathered when they begin to ripen; before they be eaten, they muſt be put in a Bucket of cold Water, which will make them eat cool and pleaſant.

The Seeds of the moſt early ripe ought to be preſerv'd, and thoſe Seeds that lodg'd on the Sunny ſide of the Melon, are to be preferr'd before the reſt.

Mint.

Mint is multiply'd by Runners, that are as ſo many Arms that ſpring out of its Tuft, and take Root, but chiefly by Slips. There are divers ſorts, whereof the Garden Mint is the beſt.

It muſt be remov'd every three Years, and placed always in good Earth, at about a Foot diſtance: Some thick Tufts of it are likewiſe planted in hot Beds in Winter.

Muſtard.

Muſtard is of a hot and dry Nature, is rais'd of Seed, and will grow in any ſort of dry Soil.

N.

Naſturces.

Naſturces, commonly called Capuchin Capers, are multiply'd only by the Seed. The Leaf of it is pretty large, and the Flower of an Orange colour; the figure of the Seed is a little pyramidical, divided by Ribs, having all its Superficies engraven and wrought all over, being of a grey Colour, inclining to a light Cinnamon. They are ſown in hot Beds about the end of *March*, or the beginning of *April*, and afterwards are replanted by ſome Wall. The Seed eaſily falls as ſoon as ripe, as does that of Borage, and therefore they muſt be carefully gather'd.

O.

Onions.

Onions are ſown the latter end of *February*, or beginning of *March*, and are of two ſorts, the Red and the White, being rais'd of Seeds; the White is eſteem'd the beſt, whoſe Roots are much in requeſt for the ſeveral Uſes they are put to in the Kitchen; they delight in a fine fat and warm Mould, and are to be ſown in *March* or ſoon after; but if ſooner, they muſt be at firſt covered. They do not extend their Fibres far downwards, and therefore at the time of ſowing, the Bed is to be trod and beat flat, and the Seed as equally diſperſed as may be. When they ſpring you are to ſift ſome fine Earth a Finger thick almoſt over them, and if when they begin to appear they are trod down, the Roots will grow the larger: They have proſper'd exceeding well when ſown with Bay-ſalt, and are uſually ripe in *Auguſt*, when they are to be taken up and dried in the Sun, and reſerv'd in a dry place for Uſe. But they may be ſown all the Year for the uſe of young Onions, or Scallions; ſuch as are ſown in Autumn, muſt be cover'd with Straw, or Peas-hawm, and being preſerv'd all Winter, they will be early Cibouls, or Scallions in the Spring. The beſt Onions are ſuch as are brought out of *Spain*, whence they of St. *Omers* had them, ſome of which have weigh'd eight Pounds, chuſe therefore the large, round, white, and thin skinned ones.

P.

Parſley.

Parſley, of all Garden Herbs, is the moſt univerſally us'd in the Kitchen, it being an excellent Ingredient in moſt Pottages, Sawces and Sallets. There is the common and curl'd ſort multiply'd only by Seed, that is ſmall and of a greeniſh grey colour, and a little bending inward on one ſide, and all over ſtreak'd from one end to the other. It muſt be ſown in the Spring pretty thick, and in good and well prepar'd Ground; its Leaves when cut ſhoot out new ones like Sorrel; it can bear any moderate, but no violent Cold, and therefore it is beſt to beſtow ſome covering on it to defend it: In order to its producing ſmall Roots, it muſt be thinned in Beds, or Borders, where it is ſown, and in hot Weather it requires pretty much watering. Its Seeds are gathered in *Auguſt* and *September*.

Stone Parſley is order'd the ſame way as Aleſander.

Parſnips.

This is an excellent ſweet Root, and muſt be ſown in the Spring, in a rich mellow and well ordered Soil, whoſe tops, when they are grown to any bigneſs, ſhould be trod down, whereby the Roots will be made to grow the bigger; when you have raiſed them towards Winter, they may be diſpoſed of in Sand, to be preſerv'd in the ſame manner as Carrots, Turneps, *&c.* and the faireſt may be kept for Seed, or elſe the faireſt and oldeſt of the tops of thoſe Seeds may be taken in Summer and ſown, whereby the faireſt Roots may be attained unto.

Peas.

Peas is the chiefeſt of Pulſe, whereof there is almoſt a different kind for every ſort of Land and every Seaſon; in a ſtiff fertile Ground they yield a conſiderable Crop, without ſuch frequent Fallowings as other Grain requires, in that they deſtroy the Weeds, and fit the Land for after Crops, being an Improver, and not an Impoveriſher of Land. Of ſuch as are planted or ſown in Gardens the Hot-ſpur is the ſpeedieſt of any in growth, for being ſown about the middle of *May*, it will in about ſix Weeks return dry into your Hands again; or, if ſown in *February* or *March*, they will ſpring earlier than any ſort ſown before Winter. But if you ſow them in *September*, and can by Fences of Reed, or otherwiſe defend them from extream Froſts, you may have ripe Peaſcods in *May* following; but the beſt way is to ſow them ſo as to have them ſucceſſively one after another. The next is the Sugar Peas, which being planted in *April* is ripe about *Midſummer*, its Cods are very crooked and ill ſhaped, being boiled with the unripe Peas in them, is extraordinary ſweet; the great Inconveniency that attends them is, that their extraordinary ſweetneſs makes them liable to be devoured by Birds. The large white and green Haſtings are tender, and not to be ſet till the cold is over, and then not very thick, for they ſpread much and mount high, and therefore require the help of tall Sticks; beſides which, there is another very large, grey and extraordinary ſweet Peas that is but lately propagated, and deſerves a large Bed in your Kitchen-Garden.

They delight in a warm and light Soil; if it be rich, the Peas are the fairer; but if lean, they are the more early, and ſpend better, eſpecially when dry; ſome ſow them at random, as they do Corn, but that is not a good way; others ſet them in Ranges with a Dibble, or Setting-ſtick at a convenient diſtance, which is a very excellent way both for the ſaving of the Peas, and to give liberty to paſs between them for the hoeing, gathering, *&c.* But that which is moſt uſed and beſt approved of, is the hoeing of them in, which makes a quick riddance of the Work, and covers all at a certain depth, and does not harden nor ſadden the Ground as ſetting doth. If the Ground between them be kept bare, they will ripen the ſooner by the reflection of the Sun; and if you can furniſh them with Sticks to climb on they will yield a great increaſe.

As for Salleting, the Pod of the Sugar Peas, when firſt it begins to appear with the Husk and Tendrels, affords a pretty acid Compoſition of Sallet, as do thoſe of the Hops and Vine.

Peas Everlaſting.

Peas Everlaſting are Plants eaſily propagated, and in good Land thrive exceedingly. Their Roots yield yearly a great burden of excellent Provender for Horſes. They muſt be ſown early in the Spring on digged Ground in rows, and ſo hoed in the Intervals between the Seed; for the Seed is long in coming up, and affords no profit the firſt Year. They require Care and Pains to preſerve them from Weeds, but the ſucceeding Years will recompence you abundantly: Some ſow them firſt on a ſmall Bed, and next Year remove them into Ground new dreſs'd with Plough or Spade, and plant them about twelve or eighteen Inches aſunder, whereby they may be eaſily weeded or hoed.

Penny-Royal.

Penny-Royal is of three or four ſorts. 'Tis a common Plant in every Kitchen-Garden propagated from Slips or Branches ſet in *April*.

Peony.

Peony is a Plant of two Sexes, Male and Female; the firſt being ſingle, and known by its Leaves coming conſtantly whole, without any diviſion, its Root being long and round, and the Flower of a purpliſh red; the Females many times bearing ſingle, others double, the Leaves of all being divided on the edges, the Roots more tuberous, growing in Clods, with many round pieces faſtned to them with ſmaller Strings. Of the beſt double ones there are ſeveral ſorts: As Firſt, The double purple Peony, ſmaller in all its parts than the common red ones, the Leaves of a whiter green, and thoſe of the Flower of a bright ſhining Colour. Secondly, The double Carnation Peony, of a bright ſhining Carnation Colour at the firſt opening, but daily waxing paler, till almoſt white; the Leaves never fall off, but wither on the Stalk. Thirdly, The double Bluſh, or white Peony, large flower'd, and at firſt opening tinctur'd with a light Bluſh, but in a few Days turns perfect white, and continues ſo long before it decays, and then withers on the Stalk, which is the beſt yet come to our Knowledge. Fourthly, The double ſtrip'd Peony, that is ſmaller than the laſt in all its parts, the Flower of a fine red, ſtrip'd with white, laſts long, and falls no Leaf.

All theſe Flower in *May*, are hardy Plants, and endure long in the Ground without ſtirring. *October* is the only time to remove them; and of thoſe Roots none will grow but ſuch as have Sprouts, or Buds at the end, or rather top of them, of which ſort each piece thereof will grow, the double ones ſome Years, bring Seeds to perfection, which being ſown very thin in *September*, where they may ſtand unremov'd in the Ground for two Years, may produce new Varieties.

Pimpernell: See *Burnet*.

Pumpions: See *Citruls*.

Potatoes.

Potatoes are planted in ſeveral parts of our Country to a very good advantage, being eaſily encreaſed by cutting the Roots into ſeveral pieces, each piece growing as well as the whole Root. A good fat rich Mould is beſt for them; but they will grow indifferently in any, provided 'tis well dung'd: The Root is very near the Nature of the *Jeruſalem* Artichoak, but not ſo good or wholeſome. Theſe are planted either of the Roots or Seeds, and may probably be propagated in great Quantities, and prove good Food for Swine.

Purſlain.

Purſlain is of two ſorts, the green and the red or the Golden, and is rais'd only by Seed; to have a good Crop of which, the Plants ſhould be replanted by the end of *May*, and ſet a Foot diſtance one from another: It is a Sallet Herb propagated with ſome difficulty, being tender in the Spring, and the Froſts uſually nipping of it: But to have it early, it may be ſown on a hot Bed, or in *April* on any rich Soil finely dreſt; when the Seeds are ſown, clap over the Bed with the back of the Spade, and water it, for it delights in moiſture. If it be ſown thin, or tranſplanted apart, it will yield fair Plants either for Seed to pickle, or to boil; as ſoon as the Seeds look very black, the Stalks muſt be gathered and laid abroad in the Sun, (which will the better maturate the Seed) lay them on a Board, or Cloth to preſerve them from ſcattering or ſpilling. Houſe them in the Night, and expoſe them again in the Day time till they are ripe. Some have affirmed, that the Seed of three or four Years old is better than new.

R.

Rasberries.

Rasberries are of three ſorts, the common wild One, the large red Garden Rasberry, which is one of the pleaſanteſt of Fruits, and the white, which is little inferiour to the red. They are propagated only by Slips that ſprout out of their Stocks every Year in the Spring time, and are fit to replant the next Spring after. All of them begin to ripen about the beginning of *July.* They are planted in *March* either in Beds or Borders, obſerving the diſtance of two Foot between Plant and Plant. They ſhoot out during the Summer many well rooted Suckers, ſome of which you may take away to make new Plantations, by which means the old ones are likewiſe renewed, for they are dry as ſoon as their Fruit is gathered, therefore let not the tops be cut to a round Buſh, whereby they grow ſo thick that they will neither bear nor ripen their Fruits ſo well as if they grew taller and thinner, the only Culture uſed to them is firſt in the Month of *March*, to ſhorten all their new Shoots which grow round about the Stock, and which ought only to be thickeſt and handſomeſt; and ſecondly, to pluck away all the ſmall ones, as likewiſe the old ones that are dead.

Radiſhes.

Radiſhes are multiplied by Seed, that is round, ſomewhat thick, and of a Cinnamon Colour, growing in little kind of Cods. It is a very good Garden Root, of which there are three ſorts; the ſmall eating one which is raiſed of Seeds on a hot Bed (to have 'em early) with a ſufficient thickneſs of good rich light Mould, that they may have depth enough to Root in before they reach the Dung, and in order to have large and clean ones, make holes as deep as your Finger about three Inches diſtance, into each of which a ſound Seed or two is to be dropped, and a little covered, leaving the reſt of the Hole open, whereby they will grow to the height of the Hole before they dilate their Leaves, and yield a long tranſparent Root. But ſuch of them as are ſown after *Midſummer*, will not run to Seed that Year. The ſecond is the Horſe-Radiſh, which is encreaſed by Plants, or pieces of the Roots planted out, and by many made uſe of as an excellent wholeſome Sauce. And note, that if you dig up any of the Roots for uſe, that you leave to the upper part that joins to the Leaves about an Inch in length of the Root to plant again, which will grow and increaſe; only if 'tis dry Weather it will do well to water it, and to abate ſome of the Leaves in Proportion to your having leſſened the Root. The laſt is the black Radiſh, which is ſo mean a Root as to find no place in a good Garden.

The beſt Seed for Radiſhes, is that which produces few Leaves and a long red Root. The time of its ripening and gathering is the end of *July*, when all the Stems are cut down, and when they have been dried ſome Days in the Sun, the Seed is beat out and winnow'd. The Stocks that run to Seed ſhoot their Branches ſo high, that it is good to pluck them off to a reaſonable heighth, that the firſt Stocks may be better nouriſh'd. The firſt Radiſhes that are eaten grow in hot Beds, and by that means ſome of them may be had during the Months of *February*, *March* and *April*. And in order to be ſupplied all the other Months, ſome muſt be ſown among all manner of Seeds, they coming up ſo very quickly, that there is time to gather them before they can do harm to the other Plants. The bigger Roots (ſo much deſired) ſhould be ſuch as being tranſparent, eat ſhort and quick without ſtringineſs, and not too biting.

Rampion.

Rampion is a Plant whoſe tender Roots are eaten in the Spring, like thoſe of Radiſhes, but much more nouriſhing.

Reponces.

Reponces, or wild Radiſhes, are propagated only by Seed, being a ſort of little wild ones that are eaten in Sallets, and grow without any pains in the Fields.

Rocamboles : See *Shallots.*

Rocamboles are a ſort of wild Garlick, otherwiſe called *Spaniſh* Garlick, which is multiplied both by Cloves and Seed, which latter is about the bigneſs of ordinary Peas.

Rocket.

Rocket, being one of the Sallet furniture, is multiplied by Seed, which is extream ſmall, and of a Cinamon or dark tanned Colour; it's ſown in the Spring, the Leaf being pretty like that of Radiſhes.

Roſemary.

Roſemary is ſmall, but a very odoriferous Shrub, that is propagated by Seed, or Branches that have ſome ſhare of Root, or by Slips. The principal uſe whereof is to perfume Chambers, and in Decoctions for Waſhing, being multiply'd much like Rue, and other border Plants, it laſts ſeveral Years. And being planted upon dry Ground, hardly any Froſt injures it. There are ſeveral ſorts of it, as the broad-leaved, which is bigger than the common, and the gilded, and variouſly ſtrip'd with yellow, as if gilt, the Silver denominated from its Silver colour'd Leaves, and the double flower'd Roſemary that has ſtiffer Stalks, bigger Leaves, and many pale blue double Flowers.

Roſe-Tree.

Roſe-Tree is of divers kinds, and one of the chiefeſt Ornaments of our *Engliſh* Garden, but it's more particularly diſtinguiſh'd into four kinds. Firſt, The red, whereof there are ſeveral ſorts, as the *Engliſh* red Roſe, only obſerve that the Flowers of ſome are of a far deeper red than others.

The Roſe of the World, which differs not from the former, but in the colour of its Leaves, which are of a pale Bluſh colour, directly ſpotted thro' every Leaf of the double Flower of the ſame red colour which is in the Roſe, and is the moſt beautiful of any. The *Hungarian* Roſe, whoſe Shoots are green, and Flowers of a paler red Colour, as are thoſe of the red *Provence* Roſe, whoſe Branches and Leaves are bigger and greener than thoſe of the common red Roſe; the red *Belgick* Roſe that is much taller than the common dwarf Red, or Gilliflower Roſe, which grows lower than the ordinary Roſe, whoſe Flowers are of a pleaſant Carnation colour. The double Velvet Roſe that hath young Shoots of a ſad reddiſh green Colour, with few or no Thorns thereon, it ſeldom bears any ſtore of Roſes. The Marbled Roſe, much like the laſt in growth, but its Leaves are larger, of a light red Colour marbled and vein'd. The Roſe without Thorns, that has green and ſmoother Shoots and Leaves than the Marble one, without any Thorns at all, and the Flowers of a pale red, ſpreading their Leaves. The *Frankfort* Roſe, that hath ſtrong reddiſh Shoots full of Thorns, thick Flowers, and the Button under the Roſe bigger than ordinary. Secondly, The Damask, or pale colour'd Roſe, whereof the common Damask Roſe is the ancient Inhabitant of *England*, and well known without deſcribing. The Party colour'd Damask Roſe, *York* and *Lancaſter*, only differing from the other in its parted and marked Flowers. The Chryſtal Roſe, like the laſt, only the Marks of the Flowers are much fairer and better than thoſe of the other. The Elegant variegated *Daniſh* Roſe has ſhorter and reddiſh Shoots than the former, Leaves ſmaller, and Flowers ſomething double. The Damask *Provence* Roſe, whoſe Shoots and Leaves are longer than any of the reſt, and of a reddiſh green with very large Roſes. The Monthly Roſe bearing Flowers only three Months in *England*, viz. *June*, *Auguſt* and *September*. The Bluſh *Belgick* Roſe that hath larger Branches, and is fuller of Thorns than any of the former, the Flowers growing very thick, ſweet-ſcented, and the Water diſtilled therefrom is almoſt as good as that of the Damask. Thirdly, The Yellow Roſe, whereof the ſingle Yellow Roſe grows as high as the Damask, and whoſe young Shoots are full of ſmall hairy Prickles of dark red Leaves, ſmall, and Flowers ſingle, and pale yellow. The Scarlet Roſe of *Auſtria*, like unto the other, only the inſide of the Leaves of the Flowers is a fine Scarlet, and the outſide of a pale Brimſtone Colour. The double yellow Roſe, whoſe Shoots are ſmall, and not ſo red as thoſe of the ſingle kind, the Flowers contain very many ſmall pale yellow Leaves with a great Thrum in the middle. Fourthly, The White Roſe, whereof the common one is well known; but there are two ſorts thereof, the one being much doubler and fairer than the other. The Bluſh Roſe that differs nothing from the other, but in the Colour of the Flowers, that at firſt opening are of a fine pleaſant Bluſh Colour, and then grow ſomewhat white. The Double Musk-Roſe that riſes high with many green Branches, and dark green ſhining Leaves armed with great ſharp Thorns, the Flowers come forth together in a Tuft not very double; but there is another of the kind that beareth ſingle Roſes, the ſcent of both Flowers is ſweet like Musk. The Damask Roſe, or the white Cinnamon Roſe grows not ſo high as the laſt, but the Leaves are larger and of a whiter green, and the

Flowers bigger, whiter and more double, but not quite ſo ſweet. The Double Dog Roſe, that is in Leaves and Branches like the leſſer White Roſe. The Ever-green Roſe, that grows like wild Eglantine, whoſe Leaves fall not away in Winter, as thoſe of other Roſes, from whence it took its Name; and Flowers containing but five Leaves of a pure white Colour, ſtand four or five together at the end of the Branches. The Spaniſh Musk Roſe, that hath great green Branches, and bigger green Leaves than the laſt, and ſingle Flowers. The great Apple Roſe, that hath a great Stock, and reddiſh Branches with green ſharp Thorns, and ſingle ſmall Flowers ſtanding on prickly Buttons. The Double Eglantine, whoſe Flowers are double made up of two or three rows of Leaves of a pretty red Colour.

But of all theſe varieties of Roſes, the beſt and moſt eſteem'd amongſt the Red, are thoſe call'd the Roſe of the World, the Red Belgick, the Red Marble, the Roſe without Thorns, and the Red Provence Roſe. Among the Damask are the Chryſtal Roſe, the Elegant variegated Daniſh Roſe, the Bluſh Belgick, the Monthly and the Damask Provence Roſe. The Scarlet *Auſtrian*, and Double Yellow among the Yellow Roſes; and of the White Roſes, the Bluſh and Damask Musk Roſe.

Now Roſes are increas'd either by inoculating the Bud of them in other Shoots, or by laying down the Branches in the Earth; the beſt Stocks to inoculate upon, which muſt be done about *Midſummer*, are the Damask, the White, the *Frankfort*, and wild Eglantine; care muſt be had that all Stocks of budded Roſes be kept from Suckers, and the Buds to be inoculated as near the Ground as may be, that the budded Launce may be laid in the Earth to Root after one Years growth. You may likewiſe prick many Holes with an Awl about a Joint that will lie in the Earth, and then cover the ſame with good Mould; this do in the

Spring, and peg it down that it riſe not again, and if water'd now and then in dry Seaſons, it will be ſo rooted by Autumn, as to be remov'd and cut from its other part behind the Root, and becomes a natural Tree; one whereof is more valuable, than two of the other that are only budded, or ingrafted, becauſe very many Suckers that come from them will be of the ſame kind. But all Roſes being apt to yield Suckers, the faireſt way to increaſe them is gently to bend down part of the Tree, or the whole in the Spring, to lay all the Branches in the Ground, and to apply unto them old and well rotted Dung about the Places where they are laid, which will make them root the ſooner, and by Autumn there will be thereby as many rooted Trees of the ſame kind as Branches laid in the Earth, without prejudice to the old one, which when the new ones are cut off, may be eaſily reduc'd to its place again, and the next Year bear as plentifully as ever: Neither will it prevent the bearing of Flowers, for the laid Branches will be as plentifully ſtor'd, as if the Tree were erect, and not laid; ſo that neither the profit nor pleaſure of that Year is loſt thereby; they will alſo grow of Suckers, if they be never ſo little rooted.

The double yellow Roſes bear not ſo well when planted in the Sun, as other Roſes, but muſt be plac'd in the ſhade; and for its better bearing, and having of the faireſt Flowers, firſt, in the Stock of a *Frankfort* Roſe, put in the Bud of a ſingle yellow Roſe near the Ground, that will quickly ſhoot a good length, put into it a Bud of double yellow Roſe of the beſt kind at about a Foot higher in that Sprout; keep Suckers from the Root, as in all other inoculated Roſes, and rub off all Buds but of the deſired kind. When big enough to bear, prune it very near the preceding Winter, cutting off all the ſmall Shoots, only leaving the bigger, whoſe tops are alſo to be cut off as far as they are ſmall. When it Buds for Leaves in the Spring, rub off the ſmalleſt of them; and when for Flowers, if too many, let the ſmalleſt be wip'd off, leaving as many of the faireſt as you think the ſtrength of the Tree may bring to Perfection, which ſhould be a Standard, and rather ſhaded than planted in too much heat of the Sun, and water'd ſometimes in dry Weather, whereby fair and beautiful Flowers may be expected.

Shearing off the Buds when they are put forth, for the retarding of the blowing of Roſes is practicable enough; and a ſecond ſhearing of them may cauſe them to be ſtill later, and ſo Roſes may be had when no other Flowers are in being; but then care muſt be taken that the whole Tree be ſerv'd ſo: For if one part of it be only ſhear'd, the part unſhear'd will ſpend that Strength and Sap which you expected would have put forth new Buds in the places of thoſe cut off, and fruſtrate your deſign. Monthly Roſes, if you would have them bear in Winter, ſhould be ſet in a Tub that they may be remov'd into the Conſervatory.

As ſoon as the Roſes have done blowing, they muſt be cut with Shears pretty cloſe to the Wood, and each Branch ought to be cut again with the pruning Knife near the Spring, and that cloſe to the Leaf; Bud, and all that is ſuperfluous take away to bring the Tree into a handſome Form; they are hardy, and endure the ſevereſt Winters well enough; and they may be diſpers'd up and down the Garden in Buſhes, or to the Walls among the Fruit; or elſe ſet in Rows and Hedges, intermixing the ſeveral Colours in ſuch a manner as to have no two alike. The well placing of them much advances their Proſpect to the Eye. None of the Roſe Trees ſhould be left to grow too high; lower than a Yard and half in heighth is beſt; except the Musk Roſes which will not bear well, except againſt a Wall, Pale or Houſe-ſide, and muſt be ſuffer'd to grow eight or nine Foot, which is their uſual height.

Rue.

Rue is multiply'd by Seed that is of a black Colour and rugged, but 'tis uſually propagated rather by its Layers and Slips than by its Seed. It makes pretty Borders for Flowers, being kept clipt.

S.

Sage.

Sage, whereof there are ſeveral ſorts, the red, green, ſmall and variegated; but the firſt is the beſt, and the young Leaves thereof a very wholeſome Sallet in the Spring. It is commonly a Border Plant whoſe Culture hath nothing particular; it is like that of other Border Plants, as Roſemary, Lavender, Wormwood, *&c.* It is rais'd by ſetting the Slips and Branches in the beginning of *April.* The tender tops of the Leaves, but eſpecially the Flowers ſhould be ſparingly cropp'd, yet ſo as not to ſuffer it to be too predominant.

Salſifie.

Salſifie, or Goats-beard. The common ſort is multiply'd only by Seed, which is of a very long oval Figure, as if it were ſo many Cods all over ſtreak'd, and as it were engraven in the Spaces between the Streaks, which are pretty ſharp-pointed towards the end.

Spaniſh Salſifie.

Spaniſh Salſifie, or *Scorzonera*, is multiply'd by Seed as well as the other, and is very good boil'd, both for the pleaſure of the Taſte, and the health of the Body. It is ſown in *March*, and muſt be ſown very thin, whether it be in Beds or Borders, or elſe at leaſt it muſt be thinned afterwards, that the Roots may grow the bigger. It runs up to Seed in *June* and *July*, and is gather'd as ſoon as it is ripe.

Samphire.

Samphire is one of our Sallet furniture that is multiply'd only by Seed, it ſhould be planted by the ſides of Walls expos'd to the South or Eaſt. The open Air and great Colds are pernicious to it. It's uſually ſown in ſome Pot or Tub fill'd with Mould, or elſe on ſome ſide Bank towards the South or Eaſt, and that in *March* or *April*, and afterwards tranſplanted into thoſe Places abovemention'd; but the *French* Seed is better than our *Engliſh*.

Savory.

Savory, Winter and Summer, the latter being annual, and rais'd of Seed; the other living over many Winters, and increas'd by Slips as well as Seed: They are both, as to the uſes of them, well known in the Kitchen, more particularly the Leaves are us'd to ſome Ragou's, and among Peas and Beans.

Scallions: See *Ciboules*.

Scallions are Herbs well known how to be propagated, whereof the red, hard, little, and ſweet are the beſt, being very good to excite Appetite.

Scurvy-graſs.

Scurvy-graſs is rais'd of Seed. That of the Garden, but eſpecially that of the Sea is a ſharp biting and hot Herb of Nature, like unto *Naſturcium*, prevalent in the Scurvy, whereof a few of the tender Leaves may be admitted into our Compoſition of Sallet.

Selery.

Selery is only multiply'd by Seed, which is of a yellowiſh and longiſh oval Figure, and a little bunch'd; it is not good but at the end of Autumn and Winter Seaſon. It is firſt ſown in hot Beds the beginning of *April*, and becauſe of the extreme ſmallneſs of its Seed, you cannot help ſowing it too thick, ſo that without thinning of it ſeaſonably before it be tranſplanted, it warps and flags its Head too much, and grows weak, ſhooting its Leaves outward in a ſtragling manner. In the tranſplanting of it, the Plants are to be plac'd two or three Inches one from another, for which we make holes in the Nurſery Bed with our Fingers; only what comes from the firſt ſowing, is tranſplanted the beginning of *June*, about what time the ſecond ſowing is ſowed, which is in open Beds at a Foot diſtance, and the ſame muſt be thin cropped and tranſplanted as the other, but more muſt be planted the ſecond time than the firſt. The tranſplanting of them in hollow Beds is good only in dry Ground; ſo the ſecond way of tranſplanting them is in plain Beds, not made hollow, but both muſt be extreamly water'd in Summer, which contributes to make them tender; and in order to whiten the ſame, begin at firſt to tie the Selery with two Bands when 'tis big enough in dry Weather, then Earth it quite up with Earth taken from the high rais'd Pathways, or elſe cover it all over with long dry Dung, or dry Leaves, and this whitens it in three Weeks or a Month; but becauſe when it is whiten'd it rots as it ſtands, if not preſently eaten, it is not to be ſo earthed up, or cover'd with Dung, but in ſuch Proportion as you are able to ſpend it out of hand; hard Froſts quite ſpoil it, and therefore upon the approach thereof, it muſt be quite cover'd over; in order to which, after it is tied up with two or three Bands, it is taken up with the Earth at the beginning of Winter, planted in another Bed, and the Plants ſet as cloſe to one another as may be, which will make them require much leſs covering than before when more aſunder. To raiſe Seeds from them, ſome Plants muſt be tranſplanted into ſome by-place after Winter is paſt, which will not fail to run to Seed in *Auguſt*. There is but one ſort of this Plant. The tender Leaves of the blanch'd Stalk do very well in our Sallets, as likewiſe the Slices of the white Stems, which being crimp and ſhort, and firſt peel'd and ſlit longwiſe, are eaten with Oil, Vinegar, Salt and Pepper, and for its high and grateful taſte is ever plac'd in the middle of the grand Sallet at great Men's Tables. Have a care of a ſmall red Worm that is often lurking in theſe Stalks.

Skirrets.

Skirrets are a ſort of Roots propagated by Seed, and cultivated like other Roots, as is directed in the Month of *March.*

Smallage.

Some uſe this Herb in their Pottage. It's rais'd either by Slips or Seed, which is reddiſh, and pretty big, of a roundiſh oval Figure, a little more full and riſing on one ſide than the other, and ſtreaked from one end to the other.

Snap-Dragon.

Snap-Dragon, Antirrhinum, has ſome pretty diverſities. Firſt, the white Snap-Dragon very common. Secondly, The white variegated one like the other, but broader leav'd, divided in the middle and turn'd up on the edges, with many ſmall long purpliſh Lines on the inſide. Thirdly, The red, which is of two or three ſorts, the beſt flowered like the former of a deep red Roſe Colour, but the other paler. Fourthly, The yellow diſtinguiſh'd only from the common white in the yellow Colour of its Flowers, they Flower from *May* to *July*, and the Seeds are ripe in *Auguſt*, they being all rais'd from Seed, bear Flowers the ſecond Year, when the old Roots commonly periſh; yet the Slips being taken off and ſet, will grow the beſt, being thoſe that do not riſe to Flower, and the beſt time of ſetting them is the end of *May*, or the beginning of *June.*

Sorrel.

Sorrel, of theſe are ſeveral ſorts, of which the *French* Sorrel is the beſt; but of the common ſort the largeſt is beſt for the Garden, and ſerves for many Uſes in the Kitchen, being rais'd eaſily enough from Plants, which ſhould not be ſet too near, the ſame being apt to grow large and ſpread abroad; but the uſual way of propagating it, is by Seed, which is ſmall, ſlick, and of a Triangular Figure, ſharp pointed at the end, and of a dark Cinamon Colour. It may be ſown (of whatſoever ſort it be) in *March*, *April*, *May*, *June*, *July* and *Auguſt*, and the beginning of *September*, provided ſufficient time be allow'd it to grow big enough to reſiſt the vigour of the Winter, it's ſown either in open Ground, or elſe in ſtreight Rows or Furrows, in Beds or Borders; in all which caſes it muſt be ſown very thick, becauſe many of its Plants periſh; the Ground it requires ſhould be naturally good or well improv'd with Dung; it muſt be kept clean from Weeds, well water'd, and once a Year cover'd with a little Mould after it's firſt cut down to the Ground. The Mould ſerves to give it new vigour, and the Seaſons moſt proper for applying it are the hot Months of the Year.

Its Seed is gather'd in *July*, by which it is propagated, tho' that call'd round Sorrel from the roundneſs of its Leaves (thoſe of the other ſort being ſharp pointed) is multiply'd by running Branches that take Root in the Earth as they run over it, which being taken off and tranſplanted produce thick Tufts, and theſe alſo other Runners.

Spinage.

Spinage is an excellent Herb crude, or boiled, being multiply'd by Seed only, that is pretty big, horn'd and triangular on two ſides, having its Corners very ſharp pointed and prickly; and on that part which is oppoſite to thoſe pointed Horns, it is like a Purſe of a greeniſh Colour. This Plant requires the beſt Ground, and is planted either in open Ground, or in Furrows, in ſtreight Rows upon well prepar'd Beds, and this ſeveral times in the Year, beginning about the middle of *Auguſt*, and finiſhing about a Month after; the firſt is fit to cut about the midſt of *October*; the ſecond in Lent, and the laſt in *May*. They may be alſo ſown early in the Spring. Thoſe that remain after Winter run up to Seed towards the end of *May*, and are gather'd about the midſt of the Month following. They muſt be well order'd; and if the Autumn prove very dry, it will not be amiſs to water them ſometimes. They are never tranſplanted.

Strawberries.

Strawberries deſerve a place in the Orchard, or Garden, being humble and content with the ſhades and droppings of the more lofty Trees. There are various kinds of them, as the common *Engliſh* Strawberry, much improv'd by being tranſplanted from the Woods to the Garden, the white wood Strawberry more delicate than the former, the long red Strawberry, the *Polonian*, and the green Strawberry, which is the ſweeteſt of all, and lateſt ripe. But ſome eſteem, that the beſt of all which hath not long ſince been brought from *New England*; it is the earlieſt ripe of all *Engliſh* Fruit, being ripe many Years, the firſt Week in *May*. They are of the beſt Scarlet Dye, and are propagated of Runners, which is a kind of Thread or String which grows out of the Body of the Plant, which eaſily takes Root at the Points or Knobs, and in two or three Months time are fit to tranſplant; but the beſt to Plant are thoſe that ſhoot firſt in Spring. They are planted either in Beds or Borders, and ſhould be well water'd. They thrive beſt in a moiſt Soil; the time of planting them is in *May*, or *September*, in moiſt Weather. They bear well the Year after they are planted. But if you would have Strawberries in Autumn, the firſt Bloſſoms which they put forth may be cut away, and their bearing hindred in the Spring, which will make them afterwards blow a-new, and bear in their latter Seaſons; and in order to get ſome of theſe of a larger ſize, as ſoon as they have done bearing, let them be cut down to the Ground, and cropt as ſoon as they ſpire, till towards the Spring: And when you would have them proceed towards bearing, now and then as you cut them, ſtrew the Powder of dried Cow-dung, Pigeons-dung, Sheeps-dung, *&c.* upon them, and water them when there is occaſion. Such as are red, throughly ripe, large, and of a pleaſant Odour, are the beſt, being agreeable to the Taſte; they extinguiſh the heat and ſharpneſs of the Blood, by refreſhing the Liver. They ſhould be tranſplanted once in three or four Years.

Succory: See *Endive.*

T.

Tanſie.

Tanſie is rais'd by Seeds, Slips or parting of the Roots; a Herb hot and cleanſing, but in regard of its domineering reliſh, muſt be ſparingly uſed with our cold Sallets.

Tarragon.

Tarragon is one of the perfuming, or ſpicy Furnitures of our Sallets, being propagated both by Seeds and rooted Slips, and by ſetting of the tops which ſpring again ſeveral times after they are cut. It endures the Winter, and requires but little watering in the drieſt of Summers. When planted in Beds, it requires eight or nine Inches diſtance for each Plant one from another, and the beſt time for it is in *March* or *April*, which hinders not but that it may be tranſplanted again in the Summer Seaſon. The beſt for uſe, is that which is freſh and tender, and not the Leaves which hang on the Ground, but the tops are to be preferr'd.

Thiſtle Carduus: See *Carduus.*

Thyme.

Thyme is of ſeveral ſorts which are multiply'd by Seed, that is very ſmall, and thoſe Plants or Stems of it that produce ſeveral rooted Slips and Suckers are ſeparated to replant into Borders, for Thyme is ſeldom planted otherwiſe; a Border of it is a conſiderable and neceſſary Ornament in a Kitchen-Garden.

Turneps.

Turneps, whereof there are ſeveral ſorts; the round which is the moſt common, the long other-wiſe call'd narrow, and the yellow. Theſe are uſually nouriſh'd in Gardens, and are properly Garden Plants, yet they are very advantageous being ſown in Fields, not only for culinary Uſes, but for Food for Cattel, as Cows, Swine, and, of late Years, Sheep. They delight in a warm, mellow, and light Ground, rather ſandy than otherwiſe, not coveting a rich Mould. The Land muſt be finely plow'd and harrow'd, and the Seed ſow'd and rak'd with a Buſh (as I have ſhew'd already.) They are ſown at two Seaſons of the Year; in the Spring with other like Kitchen Trade, and alſo about Midſummer and after. Cows and Swine will eat them raw, if they are introduc'd into the Diet, by giving the Turneps firſt boil'd to them, then only ſcalded, and laſt of all raw. It is a piece of great neglect amongſt us, that the ſowing of them is not more proſecuted, ſeeing the Land need not be very rich, and that they may be ſown as a ſecond Crop alſo, eſpecially after early Peas. They ſupply the great want of Fodder that is uſual in Winter, not only for fatning Beaſts, Swine, *&c.* but alſo for Milch-Cows.

The Seaſon for ſowing this Plant for the Kitchen, is about Midſummer, that they may be ready to improve upon the autumnal Rains, which makes them much ſweeter than the Vernal, yet you may ſow in *April* to have Turneps in the Summer. They muſt not be ſown too thick, for that will hinder the growth of the Root; but if the over fatneſs of the Ground, which is a very great fault for Turneps, or over much wet cauſes them to run out into Leaf more than in Root, then treading down the Leaves will make them Root the better. And if the Roots of them are uſeful and palatable, the Greens or Leaves of ſuch as have been ſown late, and liv'd over the Winter are ſo too. They being frequently boil'd and eaten with ſalt Meats prove an excellent Condiment.

V.

Violets.

Violet Plants, as well the double as ſingle ſort, and of what Colour ſoever they be, though they produce Seed in little reddiſh Shells or Husks, yet they are multiply'd only by Slips, each Plant or Stock of them growing inſenſibly into a Tuft that is divided into ſeveral little ones, which being replanted grow in time big enough to be likewiſe divided into others. The double Violets more particularly ſerve to make pretty Borders in our Kitchen-Gardens, their Flowers placed on the Superficies of Spring-Sallets making a very agreeable Figure.

W.

Wormwood.

Wormwood is multiply'd by Seed that is of a pretty odd Figure, as being a little bent inward in its ſmalleſt part, and on the other end which is bigger and rounder, a little open, and upon which laſt end there is a little black ſpot. Its Colour is yellowiſh at the bigger end, and its ſharper end inclines to black: Its Seed is ſeldom us'd, becauſe it is difficult to fan, it being very little; and therefore when there is occaſion of propagating Wormwood, its Cuttings, that are a little rooted, are rather made uſe of. It's planted on Borders or Edges, in a line, at two or three Inches diſtance, and five or ſix deep in the ground. It is good to ſlip them every Spring, to renew them every two Years, and to take away their oldeſt and decay'd Stocks. The Seed is gather'd about *Auguſt*.

Chap. II.

HAVING given an Account of the ſeveral Herbs, Plants, *&c.* belonging to the Kitchen-Garden, I ſhall, before I proceed to the Deſcription of the Orchard and Fruit-trees, take notice of ſeveral ſorts of Flower-trees, Winter-greens, and other Shrubs, that will bear the Froſt, which are both convenient and ornamental for the making of Hedges, Walks, and the Partitions of the ſeveral Quarters of Gardens, Orchards, *&c.* whoſe ſhelter is of great Advantage to preſerve your Gardens warm, as well as to afford a pleaſant Proſpect to the Eye; obſerving the ſame Method with that of the Kitchen-Garden. I begin with

Acacia.

The *French* do mightily adorn their Walks with the *Virginian Acacia*: It endures all ſharp Seaſons but high Winds; which, becauſe of its brittle Nature it does not well reſiſt. The Roots which run like Liquorice under ground, are apt to emaciate the Soil, and therefore not fit for Gardens. It's increas'd by Suckers.

Alaternus.

The *Alaternus* thrives very well in *England*, and bears the ſevereſt Froſt. It makes fine Hedges, and is a quick grower; the Seed ripens in *Auguſt*, the Bloſſoms of which afford an early relief to the Bees: And the *Phyllyrea*, of which there are five or ſix ſorts, are ſtill more hardy, both which are rais'd of their own Seeds or Layers, only the *Phyllyrea* lies long in the Ground, and the *Alaternus* comes up in a Month after it's ſow'd. Being tranſplanted for Hedges or Standards, they are to be govern'd by the Shears, and tranſplanted at two Years growth;

clip them in Spring after Rain, before they grow ſticky, while the Shoots are tender; thus it forms a fine Hedge planted in ſingle Rows at two Foot diſtance, of a Yard thick and twenty Foot high if you think fit, and furniſh'd with Branches to the bottom: Only becauſe of the Winds, it may be neceſſary to ſupport it with ſome Wall or Frame, if you let it grow to ſuch a heighth.

Almonſdwarf.

Almonſdwarf is a very humble Shrub, bearing in *April* many fine Peach colour'd Bloſſoms. 'Tis a very pleaſant Plant, and yields plenty of Cions.

Althæa Fruticoſa.

Althæa Fruticoſa, or *Shrub-Mallow*, of which there are two ſorts, the purple and the white. They endure the Winter, and are uſually planted Standards: They bring forth their Flowers in *Auguſt* and *September*, and laſt till the Wet or Cold ſpoils them: the Tree is increas'd by Layers, and may alſo be rais'd by Seed, which muſt be ſown in *February*, and kept well water'd after they come up; they may be tranſplanted the ſecond Year, and will blow the fourth; they are very ſubject to be overrun with Moſs, which ſhould be rubb'd off.

Arbutus.

Arbutus, or Strawberry-tree, grows common in *Ireland*. It is difficult to be rais'd from the Seeds, but may be propagated by Layers. It grows to a goodly Tree, endures our Climate, unleſs the Weather be very ſevere, and makes beautiful Hedges.

Bucks-horn Tree.

Bucks-horn Tree, or *Virginian Sumach*, grows in ſome Places ſix Foot high, the young Branches being of a reddiſh brown, feeling like Velvet, and yielding Milk if cut or broken. The Leaves are ſnip'd about the edges, and at the end of the Branches come forth long, thick and brown Tufts, made of ſoft and woolly Thrums, among which appear many ſmall Flowers: The Roots put forth many Suckers, whereby it's increas'd.

Bays.

Bays are of ſeveral ſorts, and are propagated of Suckers, Layers and Seeds, or Berries, which ſhould be dropping ripe e'er gather'd. *Pliny* orders the Berries to be gather'd in *February*, and ſpread till their Sweet be over, and then to be put in Dung and ſown. Some ſteep them in Wine, but Water does as well; others waſh the Seeds from their Mucilage by breaking and bruiſing the glutinous Berries: But the beſt way is to interr them as you furrow Peas, or rather to ſet them apart. Defend them the firſt two Years from piercing Winds. This aromatick Tree loves the ſhade, but thrives beſt in hotteſt Gravel, on which Soil it beſt endures the Froſt; but if it is any way injur'd, cut it down to the Ground, and it will recover again, or elſe it will die. Having paſſed the firſt Difficulties, Culture about the Roots wonderfully augments its growth. They ſometimes grow thirty Foot high, and two in diameter: They are fit both for Arbours and Palliſado Work, if the Gardener underſtands when to prune and keep them from growing too woody: The Berries are emollient, and ſovereign in Diſtempers of the Nerves, they are us'd in Colicks, Gargariſms, Bathes, Salves, Perfumes; and ſome uſe the Leaves inſtead of Cloves.

Celaſtrus.

Celaſtrus, or Staff-tree, bears a few green Leaves all Winter, and is fit to mix with the Pyracantha to make an ever-green Hedge.

Granade.

Granade, there are three ſorts of them: They differ little in Culture from the *Alaternus*: Conſiderable Hedges may be rais'd of them in Southern Aſpects: Their Flowers are a glorious Recompence for our Pains in pruning them. They muſt be diligently purg'd of their Wood. If you plant them in Gardens to the beſt Advantage, keep them to one Stem, and enrich the Mould with Hogs-dung well rotted. Plant them in a warm corner to have Flowers. If you plant them in Hedge-rows, looſen the Earth at the Roots, and enrich it Spring and Autumn, leaving but a few woody Branches. At the Tranſplantation of them they ſhould be well water'd.

Hypericum Frutex.

Hypericum Frutex is a Shrub yielding abundance of ſmall ſlender Shoots, which in *May* are very thick ſet with ſmall white Bloſſoms, that the Tree ſeems to be all over hoary with Froſt, are cover'd with Snow: It is increas'd by Suckers, and endures all Weathers.

Judas-tree.

The Judas-tree yields a fine purpliſh, bright, red Bloſſom in the Spring, and is increas'd by Layers or Suckers.

Jeſſamine.

Jeſſamine: There are ſeveral ſorts of this Plant: Firſt, the White Jeſſamine, that hath divers flexible Branches proceeding from the bigger Boughs that come from the Root; at the end of white young Branches come forth divers Flowers together in a Tuft, opening into fine white pointed Leaves, and of a ſtrong ſweet ſcent, which fall away with us without ſeeding: Secondly, the *Catalonian* or *Spaniſh* Jeſſamine, that is not ſo high as the former, but bigger in Branches and Leaves as well as Flowers, which are white when open'd, with bluſh'd Edges, and ſweeter than thoſe of the former: Thirdly, the double *Spaniſh* Jeſſamine; it Flowers white like the firſt, but bigger and double, and conſiſting of two rows of Leaves that are ſweet as the former: Fourthly, the yellow Jeſſamine, which upon long Stalks bears ſmall long hollow Flowers, ends in five, and ſometimes ſix yellow Leaves, and are ſucceeded by black ſhining Berries: Fifthly, the *Indian* Scarlet Jeſſamine, whoſe

Branches are ſo flexible as not to be able to ſuſtain themſelves without the help of ſomething to ſupport them: The Flowers come forth many together at the end of the Branches, being long like a Fox-glove, opening at the end into five fair broad Leaves, with a Stile in the middle of a Saffron colour. The Jeſſamine Flowers from *July* to the middle of *Auguſt*, the firſt white and common yellow being hardy, and able to endure our Winter and Colds, are increas'd by Suckers; but the *Indian* yellow, or *Spaniſh*, muſt be planted in Boxes, or Pots, that they may be hous'd in Winter: They are uſually increaſed by being grafted late in the Spring on the common white Jeſſamine by Approach; but they may be alſo propagated by Layers, or Suckers.

Laurus Tinus.

Laurus Tinus is a Shrub yielding ſweet-ſcented Tufts of white Bloſſoms in the Winter, as well as Summer, is eaſily propagated from Suckers, or Layers, and makes a fine Hedge; but if 'tis injur'd by Froſts, cut it down to the Ground, and it will recover again.

Lentiſc.

Lentiſc is a beautiful ever-green, thrives abroad with us with a little Care and Shelter: It may be propagated by Suckers and Layers: It makes the beſt Tooth-pickers in the World; and the Maſtick or Gum is of excellent uſe, eſpecially for the Teeth and Gums.

Lilac.

Lilac, or Pipe-tree, which affords fine ſcented Flowers in *April* or *May*, and is a Tree yielding plenty of Suckers, by which 'tis propagated; or it may be increas'd by Slips put into the Ground in *March*, before the Sap begins to be in Motion.

Maternus.

Maternus is a hardy Shrub, being ſomething of the Species of the *Phyllyrea*, and doth as well for Hedges, being as eaſily manag'd.

Mezereon.

Mezereon, or Dwarf-bay, riſes according to its Age from one to two, three, or four Foot high in a Buſh full of Branches with whitiſh round pointed Leaves, that appear not till the Flowers are paſt, which are of a pale Peach colour, ſome others near red, and a third milk-white, and ſweet-ſcented; they are ſucceeded by ſmall Berries, when ripe of a delicate red: The Berries and Seeds are to be ſown in good light Earth in Boxes, as ſoon as they are ripe, or elſe ſuch Earth laid under theſe fine Shrubs for the Seed as they ripen to fall into, and afterwards cover'd with the ſame Mold, not too thick.

Periploca.

Periploca is a Plant that twiſts it ſelf about a Pole like a Hop, and lives over the Winter, and yearly puts forth ſmall blue Bloſſoms. 'Tis increaſed by Layers.

Privett.

Privett is a Plant that hath been in requeſt for adorning Walks and Arbours; but is of late diſuſed.

Pyracantha.

Pyracantha, this Tree deſerves a principal place among thoſe uſed for Fences, it yielding a very ſtrong and firm prickly Branch, and ever-green Leaves. But it thrives beſt in Standards, becauſe with often clipping it's apt to grow ſticky. It is quick of growth, and rais'd either of the bright Coralline-berries, which hang for the moſt part of the Winter on the Trees, and lie as long in the Ground e'er they ſpring as the Hawthorn-berries; or elſe it is rais'd of Suckers or Slips.

Sena.

Sena-tree is of two ſorts, the Baſtard Sena, and the Scorpion Sena, both which yield a pleaſant Leaf and Flower: They grow but ſlender, and ſo need the ſupport of a Wall or Pales; but being tonſile, they may be reduc'd to any other Form; and may be rais'd by Layers or Seeds.

Spaniſh Broom.

Spaniſh Broom is not much unlike the Yellow Jeſſamine, only the Flowers are larger. It flowers in *May*, and is increas'd by Seeds or Suckers.

Spirea Frutex.

Spirea Frutex is a ſmall Tree bearing ſmall Peach-colour'd Bloſſoms about *Auguſt*. 'Tis a hardy Tree, and is increas'd by Layers.

Tamarisk.

Tamarisk is a Tree that grows tall and great, being increas'd by Suckers and Layers, and uſually planted by thoſe who reſpect Variety and Pleaſure. Its Wood is alſo medicinal.

Virginian Climber.

Virginiam Climber, or *Maracæ*, comes out of the Ground in *May* with long round winding Stalks, more or leſs, and in heighth according to the Age. From the Joints come the Leaves, and at each one, from the middle to the top, a Claſper like a Vine, and a Flower; alſo the Leaves are of a whitiſh Colour, having towards the bottom a Ring of a perfect Peach-colour, and above and beneath it a white Circle; but the ſtronger part is the Umbrane, which riſes in the middle, parting it ſelf into four or five crooked ſpotted Horns, from the midſt whereof riſes another roundiſh Head that carries three Nails or Bars, biggeſt above, and ſmall at the lower end. It bears Fruit like a Pomegranate. Its beautiful Flowers ſhew themſelves in *Auguſt*, the Stalk dying to the Ground every Winter, ſpringing again from the Roots in *May*, which ſhould be covered and defended from hard Froſts in Winter. It ſhould be planted in a large Pot, to hinder the Roots from running; and for houſing in Winter, and ſetting in the hot Sun in Summer, it muſt have the hotteſt place that may be, or it will not bear at all.

The Pots may be ſet in the Spring in hot Beds to bring them forwards.

Woodbine, or *Honey-ſuckle.*

Honey-ſuckles bear a fine Flower, and eſpecially thoſe of the double red ſort, and may be brought to cover Arbours, or to adorn other parts of the Orchard, being to be clipped into any form, and are eaſily rais'd of Layers.

Yucca.

Yucca is an *American* Plant, but hardier than we take it to be: It will ſuffer our ſharpeſt Winter without ſetting in Caſes. When it comes to ſome Age it bears a Flower of admirable Beauty; and being eaſily multiplied, might make one of the beſt and moſt ornamental Fences in the World for Gardens.

Moſt ſort of Fruit-trees, as Apples, Cherries, Codlings, Plumbs, *&c.* make good Hedges, and afford a good Shelter, being planted to divide Gardens, Orchards, *&c.*

BOOK XIV.

Chap. I. *Of Fruit-Trees.*

HAving treated of the Kitchen-Garden, I ſhall next conſider the Orchard, there being nothing more profitable than the Planting of Fruit-Trees; of which *Worceſterſhire*, *Herefordſhire*, *Glouceſterſhire*, *Kent*, and many other Places, can give us ample Inſtances: And therefore it will be neceſſary, more particularly, to conſider the Improvement that is to be made of this part of Husbandry, and the Advantages of it, which conſiſt in many Particulars: as,

Firſt, in the Univerſality of it, there being hardly any Soil, but one ſort of Fruit-trees or other

ther may be rais'd on them, eſpecially if judiciouſly managed.

Secondly, the uſe of Fruit is alſo univerſal, both for eating and drinking, there being hardly any Places where, of late Years, Fruit is not much made uſe of, eſpecially the Juice for Cyder; which being made of good Fruit, and well prepared, is a moſt delicious, wholeſome Liquor, and moſt natural to our *Engliſh* Bodies, there being no County in *England* that hath afforded longer-liv'd People than the Cyder Counties. The greateſt Inconvenience that attends it, is, that it is a very tickliſh Liquor, and requires a great deal of Art and Skill to manage, as I ſhall have occaſion to ſhew hereafter.

Thirdly, in the Charges and Expences of it, which are very ſmall, eſpecially if compared with that of other parts of Husbandry, there being hardly any more required than the trouble of gathering them, after a few Years at firſt, which is a very inconſiderable Charge to the Profit and Advantage that accrues to the Owner afterwards. Mr. *Hartlib*, in his Legacy, telling us of the Benefit of Fruit-trees, ſays, "That they afford curi-"ous Walks, Food for Cattel in Spring, Summer, "and Winter, Fuel for the Fire, Shade from the "Heat, Phyſick for the Sick, Refreſhment for "the Sound, Plenty of Food for Man, and that "not of the worſt, and Drink alſo of the beſt, "and all this without much Labour, Care, or "Coſt.

So that conſidering the great Expence of the other parts of Husbandry; as alſo the Charge of Plowing, Sowing, Reaping, Inning, and Thraſhing of Corn, it will come much ſhort of the Profit of Fruit-trees; nay, many times Fruit amounts to more than Corn will yield, tho' the Charges were not deducted.

And I cannot but think Fruit-trees a great Improvement of the Land where they are planted, in that the Graſs which grows underneath them will be forwarder in Spring than any other, and if mow'd will yield twice the quantity of Hay: But the mowing of Orchards being prejudicial to the Trees, I ſhall rather adviſe the keeping of it ſhort fed with Cattel the fore-part of the Summer (eſpecially if your Plantation is ſo large that you cannot keep it conſtantly dug) which the Cattel will then eat as well as other Graſs; and if it ſhould grow rank, and get a-head of you the latter part of the Year, let it but ſtand till the Froſt nips it, and the Cattel will be glad of it: But I think Trees may be ſo planted both in Orchards and Fields as only to ſhade the Graſs, and prevent the burning of it in Summer, and to drop on the Graſs but very little, which is the only occaſion of its Sourneſs, as I ſhall endeavour to ſhew afterwards. And that the Leaves of Trees are a very great Improvement of Land, may be ſeen by ſmall Incloſures, which are commonly richer and more fruitful than large Fields adjoining to them, tho' of the ſame Soil; of which alſo Woods are an evidence, by the Improvement they make of any ſort of Soil they are planted on. And that Fruit-trees are a great Improvement of Land, is the Opinion not only of the Ancients, who have compoſed many large Volumes to encourage this Work, giving it the greateſt Encomiums, and preferring it before moſt other Employments; but likewiſe of Mr. *Blith*, Mr. *Auſten*, and all others that have writ lately on this Subject, in that they cauſe Land to yield a double Crop, and increaſe the Advantage of its common Produce of Graſs too. And beſides the Advantage that accrues to the private Owner, it would be of benefit to the Publick to have Fruit-trees much more propagated than they are, in that it would hinder the vaſt Conſumption of *French* Wines, which is the enriching of a Foreigner, by a Trade very prejudicial to this Nation, and inſtead of it might procure to us a conſiderable foreign Trade, of no leſs Advantage than the other has been prejudicial. In order therefore to advance and promote this uſeful part of Husbandry, I ſhall firſt begin with the Seminary and Nurſery, as what is the firſt Work to be taken care of where you have not the opportunity of buying Trees, or that you deſign the raiſing of them your ſelf.

Chap. II. *Of the Seminary and Nurſery for Fruit-Trees.*

THE Seminary and Nurſery of Fruit-trees is to be order'd much after the ſame way as is before deſcribed for Foreſt-trees: As firſt, You muſt towards *October* cleanſe the Ground of Weeds, Roots, *&c.* which you deſign for this purpoſe: And note, that wet or very ſtiff Clay, and Land rich with Dung, is not good for this Uſe. Make the Mould very fine, and where you can get Crab-ſtocks enough in the Woods, you may plant your Nurſery with them; but if your Nurſery be large, and they are hard to get, your dependency muſt be upon thoſe you raiſe in your Seminary, which are eſteem'd the beſt. The way of doing of which, is to keep the Stones of ſuch Fruit as is early ripe in Sand till *October*; and then ſtretching of a Line croſs your Beds, if you make Beds for them, prick Holes by it about a hand's breadth diſtant one from another, ſetting of the Stones about three Inches deep; and having finiſhed one Row, remove your Line to another, which muſt be about a Foot diſtance from the former: And ſo you may go on with your ſetting of them if you raiſe your Seeds on Beds; but if not, your Rows muſt be two Foot or more diſtant from one another, that ſo you may have liberty to go between to weed them, obſerving to keep each ſort by themſelves. All kind of Nuts, *&c.* may be ſet in the ſame manner: And for Stocks raiſed from the Seeds of Kernels, of Apples, Pears, or Crabs, ſome propoſe this Method; which is, after having made any Cyder, Verjuice, or Perry, to take the Muſt, which is the Subſtance of the Fruit, after the Juice is preſſed out, and the ſame Day, or next after, before it heats, have the Seeds ſifted out of it with a Riddle, on a clean Floor or Cloth, which ſow as ſoon as may be upon Beds of fine Earth very thick, for ſome being bruis'd in the grinding or pounding, and others not being ripe, many will never come up; upon them ſift fine Mould about two Fingers thick, laying White-thorns or Furze on them till the Ground is ſettled, to prevent the Birds or Fowls from ſcraping of them up: And, to keep them warm in the Winter, lay ſome Fern or Straw on them, which you muſt be ſure to remove in Spring, before the Seeds begin to ſhoot, which is commonly in *May*, and likewiſe to keep them well weeded; and if the Summer happen to be dry, they may be ſometimes watered. Be careful likewiſe to ſet Traps for the Moles and Mice, which are very greedy of them; or you may, as ſome ſay, poyſon the Mice with pounded Glaſs mixed with Butter and Oatmeal and caſt in bits upon the Beds.

Crab-ſtocks. The beſt Stocks to graft on are thoſe that are raiſed of the Kernels of Wildings, and Crabs of the moſt thriving Trees, tho' in *Herefordſhire* they reckon the Gennet-Moyl, or Cydoddine Stock (as they call it) to be the beſt Stock to preſerve the Guſt of any delicate Apple, it being obſervable, that the Wild-ſtock enlivens the dull Apple, and the Gennet-Moyl ſweetens and improves the over-tart

Apple, but that the Tree laſts not ſo long as if grafted on a Crab-ſtock; and tho' the Fruit doth always take after the Graft, yet it is ſomething altered by the Stock, either for the better or worſe.

To be furniſhed with ſuch variety of Stocks as is neceſſary for the ſeveral ſorts of Fruit trees that you are to raiſe, the Seminary ought to be filled with ſuch as are raiſed of Peach-ſtones, Plumb-ſtones, Cherry-ſtones, Quince-ſtocks, *&c.* or of ſuch as are raiſed of Suckers from the ſame, which are as good according to what each ſort of Tree requires; of which I ſhall give an Account hereafter.

Quince-ſtocks.

But the beſt and moſt expeditious way to raiſe a great quantity of Quince-ſtocks for your Nurſery, is to cut down an old Quince-tree in *March* within two Inches of the Ground, this will cauſe a multitude of Suckers to riſe from the Roots. When they are grown half a Yard high, cover them a Foot thick with good Earth, which in dry times muſt be watered; and as ſoon as they have put forth Roots in Winter, remove them into the Nurſery; where in a Year or two, they will be ready to graft with Pears.

Plumb-ſtocks.

Plumb-ſtocks and Cherry-ſtocks may alſo be raiſed from Suckers as well as from Stones, only you muſt have regard to the kinds from whence they proceed, becauſe of the ſorts you graft or inoculate on.

Pear-ſtocks.

Pear-ſtocks may alſo be raiſed of Suckers, and tranſplanted like the former; but thoſe that are raiſed of Seeds or Stones are eſteemed much better than thoſe raiſed from Suckers or Roots.

Removing of Stocks.

Theſe Stocks when they are two Years old, or one Year, according to ſome, are beſt to be removed into the Nurſery, tho' they are never ſo ſmall, provided they make but large Shoots; where after they come to make ſtrong Shoots, they may be grafted, inoculated, *&c.* according to their

Nature, and the Uſe you deſign them for, obſerving to cut off the down-right Roots, and the Tops and ſide Branches of the Plants, leaving of them about a Foot above the Ground, and letting neither the Roots be too long, nor ſet too deep, becauſe they will be removed afterwards with the more eaſe: And it is neceſſary to remove Seed-plants often as well as Foreſt-trees, becauſe by that means they get good Roots, which otherwiſe they thruſt down only with one ſingle Root. And obſerve to ſet the biggeſt and leaſt by themſelves in different places.

Fruit-trees being of ſeveral kinds, and raiſed and increas'd ſeveral ways, as by grafting, inoculating, or budding, ſome by Seeds or Nuts, and others by Layers, Cuttings, Suckers, Slips, *&c.* according to the nature of them; and you having furniſhed your ſelf with ſeveral ſorts of Stocks for theſe purpoſes: I ſhall in the next place endeavour to ſhew the manner of uſing them, and the particular Ways and Methods uſed for the raiſing of each ſeveral ſort of Trees, and begin with Grafting.

Chap. III. *Of Grafting of Trees.*

CHOOSE your Grafts from a good bearing Branch, and from an old Tree rather than a young one, and covet not one that is too ſlender, leſt the Sun and Wind dry it too much, and cauſe it to wither. The beſt Cions are reckon'd ſuch as are of the laſt Year's Wood, and that have ſome of the former Year's Wood to them, which is ſtronger to put into the Stock than the laſt Year's Wood, and is reckon'd to advance the bearing of the Graft; but a Graft only of the laſt Year's Shoot will do very well; tho' in *Herefordſhire* they commonly chuſe a large Graft: However, thoſe

Cions are eſteemed the beſt, whoſe Buds are not far aſunder, which uſually determines the length of the Graft.

And as the Stock is more or leſs thriving, and is capable of yielding of more or leſs Sap, ſo let the Graft have more Buds; but ordinarily three or four are ſufficient.

And tho' you may graft and inoculate at moſt times of the Year, either by beginning early in the Autumn, or by budding in the Summer; yet the principal time for Grafting is the Month of *February*, for Cherries, Pears, Plumbs, and forward Fruits, and *March* for Apples. Mild open Weather is beſt, and moſt propitious for this Work; and if you ſtay till you can be pretty certain of the Froſts being over, tho' it be to the beginning or middle of *April*, if 'tis a late Spring, it will be the better.

Obſerve that a Graft cut ſome time before, and ſtuck in the Ground, and then grafted at the riſing of the Sap, takes better than thoſe that are grafted ſo ſoon as cut.

As to the Succeſs of Grafting, the main point is to join the inſide of the Bark of the Cion and the inſide of the Bark of the Stock together, that ſo the Sap that runs between the Bark and the Wood, may be communicated from the one to the other, eſpecially towards the bottom of the Cion.

Chooſe the ſtraiteſt and ſmootheſt part of the Stock for the place where you intend to graft, but if the Stock be all knotty or crooked (which ſome eſteem no Impediment) rectifie it with the fitteſt poſture of the Graft you can; and if your Stock be ſmall, Graft it about ſix Inches above the Ground; but if it is large, and where Cattle come, it is beſt to place it above their reach: In which way of Grafting there is a great Advantage to ſome ſort of Apples, in that it cauſes them to partake more of the Sap of the Crab, which makes the Fruit of a ſharp brisk Taſte, and much helps ſweet Apples, and is a particular Advantage to Golden-Pippens; tho' for young Trees for Standards it's not ſo practicable, becauſe Trees ſo grafted cannot be ſo well removed: But if your Stock be removed, it ſhould ſtand at leaſt three Years before 'tis grafted, except it makes very large Shoots the ſecond Year.

Graft your Cions on the South-weſt ſide of the Stock, becauſe that is the moſt boiſterous Wind in Summer: by which means the Wind will blow it to the Stock, and not from it, which is the way that the Graft will beſt bear the Force of it: but as to this Point, the Shelter that the Grafts have in their ſtanding is chiefly to be regarded.

Be careful that the Rain get not into the Cleft of your young grafted Stocks, but keep them clay'd till the Bark is grown over them, and leave not the Grafts above four or five Inches in length above the Stock, becauſe its being long occaſions its drawing more feebly, and expoſes it more to the ſhocks of the Wind, and the hurt of the Birds.

Only the Gennet-Moyl is commonly propagated by cutting off the Branch a little below a Bur-knot, and ſetting of it without any more Ceremony; but if they are grafted firſt as they grow on the Tree, and when they have cover'd the Head, are cut off below the Bur, and ſet, it is much the beſt way; only in the Separation you ſhould cut a little below the Bur, and peel off or prick the Bark almoſt to the Knot. And thus if the Branch have more Knots than one, you may graft and cut off yearly till within half a Foot of the Stem, which you may graft likewiſe, and ſo let it ſtand.

To perform this Work well, it is neceſſary to be provided with a good ſtrong Knife, with a thick Back, to cleave the Stocks with; a neat ſmall Hand-ſaw, to cut off the Head of the large Stocks; a little Mallet and a grafting Chiſel, and a ſharp Pen-knife to cut the Grafts. You muſt likewiſe have a ſtock of Clay well mix'd with Horſe-dung to prevent its freezing, and with Tanners Hair to prevent its cracking, Baſs-ſtrings or Woollen Yarn to tie Grafts with, and a ſmall Hand-basket to carry them in, with ſuch other Inſtruments and Materials as you judge neceſſary, according to the way and manner of grafting that you deſign to uſe, which is perform'd ſeveral ways, as,

Cleft grafting.

Firſt, By grafting in the Cleft, which is the moſt known and ancient way, and the moſt uſed for the middle-ſiz'd Stocks: The way of doing of which is, firſt to ſaw off the Head of the Stock in a ſmooth place, and for Wall-trees or Dwarf-trees to graft them within four Fingers of the Ground, and for tall Standards higher, as you think convenient, or your Stocks will give way to do. Pare away with your Knife the roughneſs the Saw hath left on the Head of the Stock, and cleave the Head a little on one ſide of the Pith, and put therein your grafting Chiſel, or a Wedge, to keep the Cleft open, which cut ſmooth with your ſharp Knife, that the top may be level and even, except on one ſide, which muſt be cut a little ſloping; then cut the Graft on both ſides ſmooth and even from ſome Knot or Bud in form of a Wedge, ſuitable to the Cleft, with a ſmall Shoulder on each ſide; which Graft ſo cut, place exactly in the Cleft, ſo as that the inward Bark of the Cion may joyn to the inward part of the Bark, or Rind of the Stock cloſely, wherein lies the principal skill and care of the Grafter if he expects an anſwerable ſucceſs of his Labour, as was ſaid before: Then draw out your grafting Chiſel, or Wedge; but if the Stock pinch hard, leſt it ſhould endanger the dividing of the Rind of the Graft from the Wood, to the utter ſpoiling of it, let the inner ſide of the Graft that is within the Wood of the Stock be left the thicker, that ſo the woody part of the Graft may bear the ſtreſs, or rather leave a ſmall Wedge in the Stock to keep it from pinching the Graft too hard, and then you may leave the out-ſide of the Graft a little thicker, eſpecially in ſmaller Stocks. Cover the Head of the Stock with temper'd Clay, or with ſoft Wax, to preſerve it not only from the extremity of the cold and drying Winds, but principally from the Wet.

Rind grafting. The ſecond way of grafting, and much like unto the former, is grafting in the Rind or Bark of the greater Stocks, and differs only in this, that where you cleave the Stock and faſten the Grafts within the Cleft in the other way; here you with a ſmall Wedge of a flat half-round Form, cut tapering to a thin point, made of Ivory or Box, or other hard Wood, you only force the Wedge in between the Rind and the Stock, till you have made a Paſſage wide enough for the Graft; after the Head thereof is ſawn off, and the roughneſs pared away, then you are to take the Graft, and at the ſhoulder or groſs part of it cut it round with your ſmall Grafting-knife, and take off the Rind wholly downwards, preſerving as much of the outward Rind as you can; then cut the Wood of the Graft about an Inch long, and take away half thereof to the Pith, and the other half taper away like to the Form of the Wedge, ſet it in the place you made with your Wedge between the Bark and the Stock, that the ſhouldering of the Graft may join cloſely to the Wood and Rind of the Stock, and then with Clay and Horſe-dung cover it as you do the other.

This way is with moſt conveniency to be uſed when the Stock is too big to be cleft, and where the Bark is thick. Here you may ſet many Grafts in the ſame Stock with good ſucceſs; and the more you put in, the ſooner the Bark will cover the Wound.

The third way of Grafting that is made uſe of is to be performed ſomewhat later than the other, and is to be done two ways; Firſt, By cutting off the Head of the Stock, and ſmoothing of it, as in Cleft-grafting; then cut the Graft from a Knot or Bud on one ſide ſloping, about an Inch and a half long, with a ſhoulder, but not deep, that it may reſt on the top of the Stock; the Graft muſt be cut from the ſhouldering ſmooth and even, ſloping by degrees that the lower end be thin; place the ſhoulder on the head of the Stock, and mark the length of the cut part of the Graft, and with your Knife cut away ſo much of the Stock as the Graft did cover (but not any of the Wood of the Stock:) place both together, that the cut part of both may join, and the Saps unite the one in the other; and bind them cloſe together, and defend them from the Rain with temper'd Clay or Wax, as before. *Whip grafting.*

The other way of Whip-grafting is, where the Grafts and the Stocks are of one equal ſize: The Stock muſt be cut ſloping upwards from one ſide to the other, and the Graft after the ſame manner from the ſhoulder downwards, that the Graft may exactly join with the Stock in every part, and ſo bind, and Clay or Wax them, as before.

Theſe ways of Whip-grafting (eſpecially the firſt) are accounted the beſt; firſt, becauſe you need not wait the growing of your Stocks, for Cleft-grafting requires greater Stocks than Whip-grafting doth: Secondly, This way injureth leſs the Stock and Graft than the other: Thirdly, the Wound is ſooner healed, and upon that account better defended from the nipping of the Weather, which the cleft Stock is incident unto: Fourthly, this way is more facile both to be learned and performed.

The fourth way of Grafting is by Approach or Ablactation: And this is performed later than the *Grafting by Approach.*

former ways; to wit, about the Month of *April*, according to the Forwardneſs of the Spring. It's to be done where the Stock you intend to graft on, and the Tree from which you take your Graft, ſtand ſo near together that they may be joyned: Upon which account it is commonly practiſed upon Orange and Lemon Trees, and other rare Plants that are preſerved in Caſes, and may upon that account be joyned with the more facility. Take the Sprig or Branch you intend to graft, and pare away about three Inches in length of the Rind and Wood near unto the very Pith; cut alſo the Stock or Branch on which you intend to graft the ſame, after the ſame manner, that they may evenly joyn each to other, and that the Saps may meet; and ſo bind and cover them with Clay or Wax, as before.

As ſoon as you find the Graft and Stock to unite, and to be incorporated together, cut off the Head of the Stock (hitherto left on) four Inches above the binding, and in *March* following the remaining Stub alſo, and the Cion or Graft underneath, and cloſe to the grafted place, that it may ſubſiſt by the Stock only.

Some uſe to cut off the Head of the Stock at firſt, and then to joyn the Cion thereunto after the manner of Shoulder-grafting, differing only in not ſevering the Cion from its Stock. Both ways are good, but the firſt moſt ſucceſsful. This manner of Grafting is principally uſed for ſuch Plants as are not apt to take any other way; as, for Oranges, Lemons, Pomegranates, Vines, Jeſſamines, Althæa Frutex, and ſuch like. By this way alſo may Attempts be made to graft Trees of different kinds one on another, as Fruit-bearing Trees on thoſe that bear not, and Flower-trees on Fruit-trees, and ſuch like.

Theſe are the moſt uſual ways of Grafting; ſome others there are, but they differ very little from the former; and where they differ, it's rather for the worſe, and therefore not worth the mentioning.

Thoſe Grafts that are bound you muſt obſerve to unbind towards Midſummer, leſt the Band injure them.

Where their Heads are ſo great that they are ſubject to the Violence of the Winds, it's good to preſerve them by tying a Stick to the Stock which may extend to the top of the Graft, to which you may bind the Graft the firſt Year: The beſt thriving Grafts are moſt in danger; afterwards they rarely ſuffer by the Winds.

Grafts are alſo ſubject to be injured by Birds, which may be prevented by binding ſome ſmall Buſhes about the tops of the Stocks.

Root grafting.

There is another way of Grafting that hath not been ſo long in uſe as the former, which is, to take a Graft or Sprig of the Tree you deſign to propagate, and a ſmall piece of the Root of another Tree of the ſame kind, or very near it, and Whip-graft them together; and binding of them well, you may plant this Tree where you have a mind it ſhall ſtand, or in a Nurſery, which piece of Root will draw Sap and feed the Graft, as doth the Stock the other way.

Only you muſt obſerve to unite the two But-ends of the Graft and Root, and that the Rind of the Root join to the Rind of the Graft.

By this means the Roots of one Crab-ſtock or Apple-ſtock will ſerve for 20 or 30 Apple-grafts; and in like manner of a Cherry or Merry Stock, for as many Cherry-grafts; and ſo of Pears, Plumbs, *&c.*

Thus may you alſo raiſe a Nurſery of Fruit-trees inſtead of Stocks, by planting of them there while they are too ſmall to be planted abroad.

This is alſo the beſt way to raiſe tender Trees that will hardly endure grafting in the Stock, becauſe this way they are not expoſed to the injuries of the Sun, Wind and Rain.

It is alſo probable, that Fruits may be meliorated by grafting them on Roots of a different kind, becauſe they are more apt to take this way than any other.

The Trees thus grafted are reckoned to bear ſooner, and to be more eaſily dwarfed than any other, becauſe part of the very Graft is within the Ground, which being taken off from a bearing Sprig or Branch will bloſſom and bear ſuddenly, in caſe the Root be able to maintain it.

The only Objection againſt this way is this, that the young Trees grow ſlowly at the firſt, which is occaſioned by the ſmallneſs of the Root that feeds the Graft; for in all Trees the Head muſt attend the increaſe of the Roots, from whence it hath its Nouriſhment.

Nevertheleſs this Work is eaſily perform'd, Roots being more plentiful than Stocks, and may be done in great quantities in a little time within Doors, and then planted very eaſily with a ſlender Dibble in your Nurſery, and will in time ſufficiently recompence your pains. If you tranſplant a Tree that the grafting place is not well grown over, place the back of the Graft to the South, and the cut to the North, and it will cauſe it to heal the better.

But for the Encouragement of thoſe that deſire to be furniſh'd with good Fruit, and good Bearers, Grafts may be carried with a little care either by Sea or Land, and will keep good from *October* to *March*, provided they are buried in Earth, and kept moiſt, tho' without any thing put to them: They will keep a great while, ſo as that I my ſelf had ſome Pear-Grafts which grew well that were ſent from *Paris*: Only if you find them any thing dry, lay them as ſoon as you receive them in Water twenty four hours, and afterwards in moiſt Earth; or you may ſtick the large ends of them in Clay, tying a Rag about them to keep it from falling off, and to wrap the other end in Hay or Straw Bands;

which will ſecure them from the Wind and Bruiſes, and is a good way for tranſporting of them.

Chap. IV. *Of Inoculation.*

INoculation is by ſome prefer'd before any of the ways of Grafting before treated of, and differs from the other ways, in that it is performed when the Sap is at the fulleſt in Summer, and the other ſorts of grafting are before the Sap aſcends, or at leaſt in any great quantity. Alſo by this way of inoculating ſeveral ſorts of Fruits and Trees may be propagated and meliorated, which by grafting cannot be done, as the Apricock, Peach and Nectarine, which rarely thrive any other way, becauſe few Stocks can feed the Graft with Sap ſo early in the Spring as the Graft requires, which makes it fruſtrate your Expectation; but being rightly inoculated in the fulneſs of the Sap rarely fails.

The Stocks on which you are to inoculate are to be of the ſame kind as before directed to graft on.

The time for this Work is uſually from Midſummer to the middle of *July*, when the Sap is moſt in the Stock. Some Trees, in ſome Places, and in ſome Years you may inoculate from Mid-*May* to Mid-*Auguſt*. As to the time of the Day, it is beſt in the Evening of a fair Day, in a dry Seaſon; for Rain falling on the Buds before they have taken will deſtroy moſt of them.

The Buds you intend to inoculate ſhould neither be too young or tender, nor yet too old, but young ones are beſt; the Apricock Buds are ready ſooneſt, they muſt be taken from ſtrong and well-grown Shoots of the ſame Year, and from the ſtrongeſt and biggeſt end of the ſame Shoots.

If Buds be not at hand, the Stalks containing them may be carried many Miles, and kept 2 or 3 Days, being wrap'd in freſh and moiſt Leaves and Graſs to keep them cool: If you think they are a little wither'd, lay the Stalks in cold Water two or three hours, and that, if any thing, will revive them and make them come clean off the Branches.

Having your Buds and Inſtruments ready for your Work, *viz.* a ſharp pointed Knife or Penknife, a Quill cut half way and made ſharp and ſmooth at the end, to divide the Bud and Rind from the Stalk, Woollen-Yarn, Baſs-matt, or ſuch like, to bind them withal; then on ſome ſmooth part of the Stock, either near or farther from the Ground, according as you intend it, either for a Dwarf-Tree, or for the Wall, or a Standard, cut the Rind of the Stock overthwart, and from the middle thereof gently ſlit the Bark or Rind about an Inch long, in form of a T, not wounding of the Stock; then nimbly prepare the Bud by cutting off the Leaf and leaving of the Bark about half an Inch above and below the Bud, and ſharpen that end of the Bark below the Bud, like a Shield or Eſcutcheon, that it may the more eaſily go down and unite between the Bark and the Stock: Then with your Quill take off the Bark and Bud dextrouſly, that you leave not the Root behind; for if you ſee a hole under the Bud on the inſide, the Root is left behind, therefore caſt it away and prepare another; when your Bud is ready, raiſe the Bark of the Stock on each ſide of the ſlit (preſerving as carefully as you can the inner thin Rind of the Stock) put in with care the Shield or Bud between the Bark and Stock, thruſting it down until the top join to the croſs-cut, then bind it cloſe with Yarn, *&c.* but not on the Bud it ſelf.

There is another way of Inoculation more ready than this, and more ſucceſsful, and differs from the former only in that the Bark is ſlit upwards from the croſs-cut and the Shield or Bud put upwards, leaving the lower end longer than may ſerve; and when it is in its place, cut off that which is ſuperfluous, and join the Bark of the Bud to the Bark of the Stock, and bind it as before, which ſooner and more ſucceſsfully takes than the other.

You may alſo cut the edges of the Bark about the Bud ſquare, and bind it faſt, and it will ſucceed well; which is the readier way, and eaſier.

About three Weeks or a Month's time after your Inoculation you may unbind the Buds, leſt the binding injure the Bud and Stock.

When you unbind them you may diſcern which are good and have taken, and which not, the good will appear verdant, and well colour'd, and the other dead and wither'd.

In *March* following cut off the Stock three Fingers above the Bud, and the next Year cut it cloſe, that the Bud may cover the Stock as Grafts uſually do.

Chap. V. *Of the Ways and Methods uſed for the raiſing of Fruit-Trees.*

HAVING already ſhew'd how to furniſh your Seminary with Stocks, and the method of Grafting, Inoculating, *&c.* of them, I ſhall in the next place conſider the ſeveral ſorts of Fruit-Trees and what Ways and Methods are the beſt and moſt proper for the propagation of each of them: I begin with the Apple, which deſerves the prehemi-nence, both upon the account of its Univerſality and Uſefulneſs, being both Meat and Drink, it may be had at all times of the Year. Of Apples there are great Variety, and for ſeveral Uſes; but as Apples and Pears and other ſorts of Fruit are of ſeveral kinds, I ſhall have occaſion to mention a great number of them hereafter, and at preſent, only take notice of ſome peculiar Apples and Pears proper for Cyder and Perry.

Apples, how rais'd. Apples are commonly raiſed by grafting upon the Crab, that being eſteemed the beſt and hardieſt Stock for them, and the leaſt ſubject to Canker; they take beſt when grafted in the Cleft or Bark, except the Gennet Moyle, which will grow of Burrs, as I have mentioned before, and the Codlin, which may be raiſed of Suckers or Slips, tho' indeed moſt of our beſt Fruit has been produc'd from the Kernel, being a kind of Wilding, as the Red-ſtreak, the Golden Pippin, *&c.* are reported to be; but it being very rare that any can be raiſed this way, moſt Kernels producing Fruit of a wild, auſtere, ſharp Taſte, tending rather to the wildneſs of the Stock on which the Tree was grafted, than that of the Graft; although many of them may ſeem fair, yet they want that briskneſs of Spirit, and are more woody than the grafted Fruit, being alſo much longer before they bear, and are more unfruitful; for the often grafting of Trees upon the ſame kind, is eſteem'd a meliorating of them, which hath occaſion'd many to endeavour the raiſing of new kinds of Apples, and other Fruits, by grafting of them upon different Stocks, which way I think deſerves Incouragement; if any ſhould attain to any ſort of Graft of this kind, I think it would be convenient at the ſecond, or at fartheſt, at the third Year's growth, to graft it upon a Stock of a more natural kind to it, for Nature delights more in an advance than going backwards. By a failure in this Point I loſt ſeveral Grafts that I believe would have been of Advantage had I been aware of the ſudden Blaſt that took them the third Year. I think Experiments of this kind more likely to ſucceed by trying a dry or an inſipid Fruit upon a pungent vigorous Sap, than the contrary; but for the gaining of a new Species of Apples, tho' tis rare to have them take, yet I think the doing of it by Seeds and Kernels the moſt likely way, becauſe many have been procur'd that way. I have obtained four ſeveral ſorts of this kind my ſelf.

Pears, how raiſed. Next unto Apples I think Pears may come in the ſecond place, and would be much more uſeful than they are, were ſuch care taken to improve the Juice of them as might be; in one thing they are to be preferr'd, that they proſper in cold, moiſt, hungry, ſtony and gravelly Land, where Apples will not bear ſo well; they are beſt grafted the ſame way as the Apple, and upon the wild Pear-ſtock raiſed of their Kernels for Standards; but for Dwarf or Wall-Trees the Quince-ſtock is eſteem'd the beſt, but then they ſhould be planted in moiſt Ground; they will grow likewiſe when grafted on the White Thorn, but not ſo well as on the former; they may likewiſe be budded on their own kind; and if Winter Pears, or any ſort of latter Fruit, be grafted on the earlieſt Pears, or earlieſt Fruit of the kind, it will forward and help them very much.

Cherries, how raiſed. Cherries are a fine Summer-Fruit, and are of ſeveral ſorts; they do beſt grafted on the Black-Cherry-ſtock, or the Merry-ſtock, which may be raiſed in great quantities from Cherry-ſtones, Suckers alſo from the Roots of the Wild or Red-Cherry, will do well, they are commonly grafted about a Yard from the Ground by whip-grafting; they may likewiſe be budded or inoculated on their own kind.

Plumbs, how raiſed. Plumbs are of ſeveral ſorts, and commonly cleft-grafted on any Stocks of their own kind, except the Damaſcen; but one of the beſt ſorts to graft them on is the Pear-Plumb; tho' I have often found them to prove well raiſed only from the Stones, eſpecially Damaſcens.

Medlars. Medlars may be cleft, or Stock-grafted, on the White Thorn, but prove beſt on the Pear or Quince-ſtock.

Filberts. Filberts may be cleft-grafted on the common Nut, and Serviſes on their own kind, or propagated by Suckers, Layers or Seeds.

Quinces, how rais'd. Quinces may be cleft-grafted on their own kind, or raiſed of Slips or Layers, and of Cuttings; they delight in a moiſt Soil.

Apricocks, how raiſed. Apricocks are uſually inoculated in Plumb-ſtocks, raiſed either from Suckers that have not been grafted before, or Stones; thoſe of the White Pear-Plumb are eſteemed the beſt, and thoſe of any other great White or Red Plumb that hath large Leaves and Shoots are very good for the budding of Apricocks or Peaches: I have known ſome, both Apricocks and Peaches, bear very well that were only raiſed of Stones, but their Roots are reckon'd very ſpungy, and ſo not apt to continue long. Apricocks do well alſo in Standards; but as they bloſſom very early againſt a Wall, ſo they are very much in danger from the Froſts, againſt which they ſhould be ſhelter'd with Matts, or other ſhelter, when they are in Bloom.

Peaches. Peaches are of ſeveral ſorts, and are raiſed the ſame way with Apricocks, and delight in the ſame Soil, and do beſt grafted on Apricock-ſtocks.

Nectarines. Nectarines delight in the ſame Soil as Apricocks and Peaches; they are raiſed by Inoculation, the beſt Stock for which is that raiſed of the Peach-ſtone.

Figs. Figs are of ſeveral ſorts, they are multiply'd of Suckers, and delight in a warm moiſt Soil.

Oranges and Lemons. Orange and Lemon Trees, in hot Countries, are raiſed of Slips, but they will not grow ſo here; they are commonly grafted or inoculated, or are raiſed by ſowing their Pippins or Seeds in Boxes, and when they are two Years old tranſplant them in Caſes, every one in a Caſe by it ſelf fill'd with rich Melon-bed Mould mingled with Loam, refined and matured by one Winter Seaſon; and when they can well ſupport it, you may either inoculate or graft them by approach in the Spring of the Year. Be diligent to ſecure them from Cold, and commit them early to their ſhelter, where they may intirely be preſerved from the Froſt; you may give them a gentle Stow, and attemper the Air with a Fire of Charcoal during the extream rigour of the Winter, in caſe you ſuſpect the Froſt has at all invaded them.

But ſo ſoon as the Spring appears, and the Froſts are intirely paſt, you may acquaint them with the Air by degrees, beginning firſt to open the Doors of the Conſervatory in the heat of the Day, and ſhutting them again at Night; and ſo by little and little you may ſet open the Windows, and ſhut them again in the Evening till all danger is paſt, and then you may bring them forth and expoſe them boldly to the Air during all the Summer following.

As theſe Trees grow big you may change and enlarge their Caſes, but be ſure to take them out Earth and all, raiſing the ſtringy and fibrous Roots a little with a Knife before you replace them, ſupplying what their new Caſes may want with the fore-deſcribed Mould. Some when they alter their Caſes denude them of all the Earth, conceiving it exhauſted and inſipid, but it is to the extream prejudice of the Tree, and doth ſet it ſo far back that a Year or two will hardly recover it.

You may gather the Flowers every Day to prevent their knotting into Fruit, ſparing only ſome of the faireſt and beſt placed for Fruit, and as many as you conceive the Tree can well nouriſh.

The Spiders do extreamly affect to ſpread their Toils among the Branches and Leaves of this Tree, becauſe the Flies ſo much frequent their Flowers and Leaves, which attract them with their Redolency and Juice; to remedy this, uſe ſuch a Bruſh as is made to cleanſe Pictures withal from Duſt, but treat them tenderly.

Almonds. Mr. *Hartlib* condemns us much for neglecting the propagating of Almond-Trees, which (ſaith he) grow very well and bear good Fruit, he having, as he ſays, ſeen divers Buſhels on one Tree in his Brother's Orchard; they grow large and upright, and need not the help of a Wall. The Almonds are in ſome ſweet, and in others a little bitter; but I am told, that often removing of it makes it grow ſweeter; the Tree is chiefly received for the Beauty of its Flowers, which being early, and of a fair, pale, reddiſh Colour, make a fine ſhow in a Garden.

They are raiſed by ſetting of the Nut in the Shell in the Month of *October*; they delight in the Sun, and a dry Soil.

Chap. VI. *Of Dwarf, Wall and Standard Trees.*

YOUR Trees being grafted or inoculated on proper Stocks, the next thing to be conſider'd, is which are to be for Dwarfs, Walls and Standards, that a proper Method may be uſed about each ſort, the ordering of which conſiſts moſtly in the pruning of them: Dwarf Trees muſt be pruned ſo as to make them hollow, and to branch low into as many Branches as you can; The ſame care muſt be taken of ſuch as are to plant againſt Walls; only as the one are to grow round, the others are, as much as you can, to be made to grow flat, that they may ſpread the better on the Wall; but for the Standards, as ſoon as you can, you are to reduce them to one Branch, which when it comes to the intended heighth you deſire, you muſt cut the top of it to cauſe it to head at that place, always conſidering the ſtrength of the Body, which if it have ſtrength enough you may prune it clear up: but if weak, leave according to its ſtrength, more or leſs Branches to grow out of the ſides, and check the Sap which ſtrengthens the Body: and ſo will the pruning of the Head, when once the Body is of a good ſtrength.

By this means being provided with all ſorts of Trees, it will in the next place be convenient to conſider the Methods to be uſed for the Planting of them out, in doing of which it will be neceſſary to know, firſt, how to order the Ground, and ſecondly, how to tranſplant the Trees.

Chap. VII. *Of the manner of cultivating Ground for an Orchard.*

THE natural Soil of an Orchard is more to be regarded than that of a Garden, becauſe the Garden-Product rooteth but ſhallow, and ſo may eaſily be manur'd to the depth that is required for Garden-Commodities; but Fruit-trees growing large and rooting deep, ought to have a deep and rich Soil, where your conveniency will allow of it.

And if the Land that you intend to plant be a Turf, or Green-ſward, you will do well to plow it two Years before you ſet the Trees in it, to make it mellow and looſe; and the deeper you plow it the better, becauſe the Trees will have the better Opportunity to Root; and if you lay Dung or Manure on it, the plowing will mix it the better with the natural Soil, and it will be much the better to dig if you deſign to ſet Beans, Peas or other Commodities with your Trees, which is the beſt way of advancing the Growth of your Trees; and if you would have your Trees to thrive, you muſt take care that your Trees be not too near together, and that no ſort of Plants be near them, which may deprive them of their Nouriſhment, or any way hinder thoſe Refreſhings and Helps that they might otherwiſe receive by the Rain or Dew.

Take care to keep the Earth about your Trees always light and clean, and often cultivated, ſo as to mend and clean it as often as it requires.

Earth that is hot or dry muſt be dug or tilled in Summer-time, either a little before, or whilſt it rains, or ſoon after; at which time you can neither Till it too often nor too deep, becauſe the doing of it in hot Weather will kill ſuch Herbs or Flowers as grow in it, except they are water'd; but cold, ſtrong and moiſt Earth is beſt to be tilled in dry Weather, only there are ſome Grounds that will not work till Rain comes.

The frequent ſtirring of the Earth prevents its goodneſs from being waſted by the growth and nouriſhment of ill Plants; but ſuch ſtirrings are not enough without pulling of the Weeds up: For ill Weeds that uſually grow in Summer and Autumn, multiply without end if they are ſuffered to run to Seed. At the time that the Trees bloſſom and the Vines ſhoot, the Earth is not to be meddled with.

To dry Earth a large Culture or Tillage may be allow'd the beginning of Winter, and the like, as ſoon as it is paſt, that the Snow and Rain of the Winter and Spring may eaſily ſink into the Earth; but to ſtrong and moiſt Earth a ſmall Tillage in *October* only, to remove the Weeds, is beſt, and to give a large Tillage in Spring when the greateſt Rains are over.

But if your Orchard is ſituated in a ſandy or dry Ground, endeavour by the help of ſome Gutters to carry off all the Water that falls in haſty Showers to thoſe Places that are manur'd, that none of it may be unprofitably waſted in the Walks or Allies; but if your Soil is ſtrong and fat, drain it off from the Orchard as much as you can. And if your Land lie flat, that wet is apt to ſtand upon it, or if 'tis a ſhallow Soil, you may ſomething help it in plowing, by gathering of the Land always up in and near the Place where you intend the rows of Trees ſhall afterwards ſtand; which will make the Soil deep where they are to ſtand, and draw off the Moiſture, as was ſaid before.

Rain-Water ſinks not ſo deep into Land as Snow, and therefore in moiſt Land it is a good way to remove the Snow as much as you can from about your Trees.

Chap. VIII. *Of the Tranſplanting of Trees.*

I Have already given ſeveral Directions for the Tranſplanting of Foreſt-Trees, which will ſerve for Fruit-Trees alſo, and therefore what I ſhall conſider about Fruit-Trees at preſent, is the diſtance they are to be planted at, and what may tend to the making of them the more fruitful; the ſeldom bearing of Fruit being one of the greateſt Diſcouragements that attends Planting.

As for Standards of Apples or Pears, I am not for planting of them nearer than forty Foot; which diſtance, if any one think too far for an Orchard, and that by the thriving of their Trees (eſpecially while they are young) they ſhall ſuſtain loſs, I ſhould rather adviſe them to plant Cherry-Trees, Codlins, Plumbs, *&c.* between, becauſe in about thirty or forty Years time they will be decaying, and ſo by cutting them down will make way for the other Trees, the largeſt of Apple and Pear-Trees, and the room that they have being what I think doth much contribute to their bearing and thriving, in that they receive the more Benefit and Refreſhment of the Sun and Air, and have the more room for their Roots to ſpread by their diſtance from each other, and the Fruit is much the better. But if you plant them in Fields or Paſtures, fifty or ſixty Foot diſtance will do well, becauſe they will be leſs prejudicial to the Graſs; but for the preventing of any Inconveniency that may come to Paſture-Lands from the dropping of the Trees, I ſhall propoſe one thing that I have already hinted at, which is, to plant all your Trees in rows from Eaſt to Weſt. Let the Trees and rows be forty Foot one from another, and let all the Trees, by pruning of them, be made to grow like a Fan, or to ſpread in the ſame Form as if they were to grow againſt a Wall, only in that the

Stem muſt be taller: This I think will prevent the prejudice that the dropping of Trees will do to the Graſs, and will ſhade the Land from burning, and improve it by the falling of the Leaves, and will alſo cauſe the Fruit to ripen much better than if they grew in the common Form; of which laſt Particular I have had the Experience of two or three Trees that I kept trimm'd after the ſame manner on purpoſe for a tryal.

Cherries, Plumbs, Quinces, and ſuch like Trees, may be planted at fifteen or twenty Foot diſtance, which is ſufficient.

It will be neceſſary at every three or four Years end to lay about aged Trees ſome Soil, eſpecially Lime or Chalk, which is done by uncovering the Mould within a little of the Roots, and applying of it, and then covering of them again with Earth; the beſt Seaſon for which Work is the beginning of Winter, that the Rains may waſh it to the Roots before the heat of the Summer invades it.

Wall-Trees. But Wall-trees ſhould be planted at ſuch diſtances as the heighth or breadth of the Wall, the Nature of the Tree, and the Nature of the Ground requires; the higher the Wall the nearer the Trees may be together; and the lower the Wall the farther diſtance, that they may have room to ſpread in breadth where they want it in heighth; eſpecially Vines, which require a more ſpacious and ample place to ſpread againſt than other Fruit, it being certain, that the more they ſpread the better they bear and thrive, which is contrary to the Opinion of all Foreign Parts: And the ſame may be obſerv'd of moſt other Wall-Fruit, eſpecially Pears and Apricocks, upon which account I cannot but think moſt of our Walls too low, and our Trees commonly planted too thick. And,

Walls for Fruit. Having occaſion to find fault with the common ſort of Walls for Fruits, it gives me an opportunity of recommending the Propoſal made by Mr.

Fatio for ſloping Walls, that ſo what is planted againſt them may lie expos'd to the direct Beams of the Sun: This ſort of Walls, breaking the Wind and reflecting the Sun-beams from one Wall to another, muſt be of great advantage for the ripening of Fruit in our cold Climate; to which I ſhall only add an accidental Experiment made by a Friend of mine, who had a Wall, the Foundation of which being bad, oblig'd him on the planted ſide, between each Tree, to make Buttereſſes of about a Yard from the Wall, which caus'd his Fruit to ripen much ſooner than it did before: His Wall ſtood a little facing to the Eaſtward of the South.

Of the Unfruitfulneſs of Trees.

But to proceed to what I think the great Point to be taken care of about Fruit trees, which is the Unfruitfulneſs of them, it being often many Years together, that both Apples, Pears and other Fruits fail, as we have of late experienc'd for ſeven or eight Years together; which Inconveniency being one of the greateſt Diſcouragements that attends Planting, as I ſaid before, it may not be amiſs a little to conſider the occaſion of this Unfruitfulneſs, and likewiſe to propoſe ſome Remedies for the ſame. Now the Unfruitfulneſs of theſe Trees commonly proceeds,

Occaſion'd by Blaſts.

Firſt, From Blaſts occaſion'd by the Winds, as many times from the Eaſt-wind in the Spring, which coming after Rain, when the Bloſſoms are wet, and bringing of Froſts with it, ſhrivels up the Leaves of the Bloſſoms and ſpoils them. If a Weſt-wind ſucceeds it commonly brings Catterpillars; the beſt Remedies againſt which are good Shelter, to prevent the Froſts; and the burning of Straw, Hawm, *&c.* to kill the other, but a great means to have Fruit all Years, is where you have the Conveniency of different Situations, that ſo when a Blaſt comes by one Wind, you may have another under ſhelter from it; and tho' the South Aſpect is the beſt for ripening of Fruit, yet the moſt conſtant bearing Orchard that I have met with, is an Orchard belonging to a ſmall Farm I have in *Hertfordſhire* that is not above a Rood of Ground which is ſituated on the ſide of an Hill that faces the North Eaſt: The Soil is a kind of a yellow Tile-Clay, and the Weſt end of it is ſhelter'd by the Houſe, and the South ſide by high Trees, but the North ſide and Eaſt end is wholly expoſed to thoſe Winds. But having a conveniency of ſeveral Situations where I now live, I may, when the Trees grow up, which I have lately planted, be able to give a better account of this particular; for Experiments of this kind muſt rather be try'd in the South Parts of *England* than North, eſpecially for North or Weſt Situations.

Want of Rain. Secondly, The want of Rain juſt at Bloſſoming-time often occaſions the dropping off of the Bloſſoms for want of Sap to nouriſh them, eſpecially in dry Grounds; and therefore I have heard of ſome in *Eſſex*, whoſe Orchards were upon a dry Soil, that have had great quantities of Fruit when all their Neighbours about them have fail'd, only upon this account, that they keep their Trees water'd at Bloſſoming-time; and of a Gentleman who had an Orchard planted on the ſide of a Hill that he could Water when he would, which hardly ever fail'd.

Suiting Fruit to the Soil. The third occaſion of Unfruitfulneſs is the not ſuiting of your Fruit and Soil together, a Point that deſerves more particular Obſervations than I have been yet able to make, and what I would deſire the Aſſiſtance of ſuch in as are willing to promote this Work, being ſatisfied that not only ſome ſort of Fruits bear better on ſome Soils than others, but alſo that they thrive much better; however in the mean time I ſhall adviſe them that plant an Orchard, to enquire what ſort of Soil their Neighbours Orchards are of, and what ſort of Fruits bear beſt in thoſe Soils, and accordingly to ſtock themſelves with that ſort of Fruit.

But a great hindrance to a due enquiry into this uſeful part of Husbandry is the variety of Names that are in many places given to one and the ſame Apple or Pear, and therefore where any one hath a good bearing Fruit, I would adviſe them to be ſure of the Name of them from ſome experienc'd Gardeners, and then a certain Judgment may be made of them. And if you find the Ground wherein you plant your Fruit-trees not ſuitable to the Nature of the Tree, it may be alter'd by applying of Earth, Clay or Sand of a different Nature to your Soil.

From barrenneſs of the Soil.

A fourth Reaſon of the Unfruitfulneſs of Fruit-trees is the Barrenneſs of the Soil they are planted on, for I cannot but think it as neceſſary to dung Orchards as Plowed Lands, that ſo the Dung may waſh to the Roots of the Trees to nouriſh them; this I reckon was the reaſon of the fruitfulneſs of the Orchard mention'd by Mr. *Hartlib* in his Legacy, when he adviſed the turning of the Waſh of a Sheep-common to the Roots of the Trees, which, he ſays, occaſioned ſuch a fruitfulneſs to an Orchard that belong'd to a Farm that an Acquaintance of his held, that the Occupier got an Eſtate out of the Farm by it, which before was ſo dear rented, that it had likely to have ruined him. And I knew a Farmer in *Kent* that uſed to ſay, that he had often obſerv'd it, that whenever he let his Hogs go into his Orchard unrung, to root about the Trees, and to dung them, he had always a Crop of Fruit; and it is certain, for Fruit-trees no Dung is ſo good as Hogs-dung, which Mr. *Worlidge* confirms in his *Vinetum Britannicum*; and tho' they may ſpoil ſome Graſs in Winter, it is eaſily levell'd in Spring. Hogs-dung is likewiſe an excellent Medicine for a Canker.

From Moſs.

Fifthly, Moſs is very prejudicial to the bearing of Fruit-trees; and is commonly occaſion'd by the coldneſs of the Land the Trees grow on, whether it is wet or dry, or their being planted too deep; and if it proceed from the coldneſs of the Land, lay Sea-coal-aſhes, Horſe-dung, *&c.* If from Moiſture, drain the Land well; but if it proceed from deep planting, if they are ſmall, it is the beſt way in very moiſt Weather to draw them up higher; but if they are too large, for that there is no remedy but replanting of them, or to plant new in their places. To cure the Moſs, in *Staffordſhire*, I am told, they burn off the Moſs of their Trees about *December* with a wiſp of Straw; but the common way is, to rub it off of young Trees with a Hair-Cloth, or to ſcrape it off with a wooden Inſtrument that may not hurt the Bark of the Trees. I knew one that had an Apple-tree very much run over with Moſs, and he made a Stye under it, in which he fatted Hogs, and it cured it. But as Moſs is ſometimes cauſed from the want of Sap, which is the reaſon that old Trees are commonly more Moſſy than young, it is good to lop off ſeveral of the Branches of ſuch Trees, which will make them proſper the better, and be leſs Moſſy; eſpecially where Trees are Moſſy that grow on dry Ground.

Sixthly, Many Trees run altogether to Wood and Branches, and ſeldom bear any Fruit; to remedy which Inconveniency, ſome propoſe hacking of the Tree, or to cut Croſſes or other Stroaks upon the Bark, to give ſome check to the Sap; others propoſe to bore a Hole through the Body of the Tree; this way carries ſome probability with it, becauſe hollow Trees, or ſuch as are hurt or decay'd in the Body or Stem, are more apt to bear than ſound ones. The ſame reaſon may be for the cleaving of the Roots of Trees, and for the putting of Stones or Wedges in them; for Trees blown aſide by the Wind, or by ſome other Accident, do uſually bear great Quantities, and ſometimes more than when they ſtood firm and upright: The reaſon of which may be the Check that is thereby given to the Sap running into the Branches, when leſs Sap might do to produce Fruit; but the beſt way is to prune off ſome of the Branches in Summer time, when the Sap is in them, which is the beſt way to abate their Luxuriancy; but this muſt be done with Judgment, the beſt time of doing which is in *June*.

Variety good.

Seventhly, It is good to have variety of Fruit in an Orchard, becauſe ſome Apples and Pears that bear in one Year will not do ſo in another; and therefore where Variety is, you will ſeldom fail of having ſome take.

To plant Fruit that will hang on the Trees.

Eighthly, Another thing to be conſider'd, is, to plant ſuch Fruit as will hang on the Trees till ripe, there being many ſorts of Fruit that will ſhake off almoſt with any Wind; upon which account it is good always to have the S. W. ſide of your Orchard well ſhelter'd with high Trees, that Wind being, as I ſaid before, the moſt troubleſome about the latter end of Summer.

I ſhall here add ſomething concerning the fencing of Trees out of Mr. *Evelyn*, communicated unto him from Dr. *Beal*, which will be of advantage to the planting of Trees in Fields for ſecuring of them from Cattel.

The fencing of ſingle Trees uſeth to be done by Rails at great Charges, or by Hedges and Buſhes, which every other Year muſt be renew'd, and the Materials not to be had in all places neither; I therefore prefer and commend you the enſuing form of Planting and Fencing, which is more cheap and eaſie, and hath other Advantages in it not commonly known: I never ſaw it but once, and that imperfectly perform'd, but have practis'd it my ſelf with ſucceſs. Take it thus,

Set your Tree on the green Swarth, or rather five or ſix Inches under it, if the Soil be very healthy; if moiſt or weeping half a foot above it: Then cut a Trench round that Tree two Foot, or more, in the clear from it. Lay a rank of the Turfs, with the Graſs outward, upon the inner ſide of the Trench toward your Plant, and then a ſecond rank upon your former, and ſo a third and fourth, all orderly plac'd (as in a Fortification) and leaning towards the Tree after the form of a Pyramid or larger Hop-hill: Always as you place a row of Turfs in compaſs, you muſt fill up the inner part of the Circle with the looſe Earth of the ſecond Spit, which you dig out of your Trench, and which is to be two foot and half wide, or more, as you deſign to mount the Hillock; which by this means you will have raiſed about your Plant near three foot in heighth. At the Point it needs not be above two Foot or eighteen Inches diameter, where you may leave the Earth in form of a Diſh, to convey the Rain towards the Body of the Tree, and upon the top of this Hillock prick up five or ſix ſmall Briars or Thorns, binding them lightly to the Body of the Plant, and ſo you have finiſhed the Work.

The Conveniencies of this kind of Planting are,

Firſt, That neither Swine, nor Sheep, nor any other ſort of Cattel can annoy your Trees.

Secondly, You may adventure to ſet the ſmaller Plants, being thus rais'd and ſecur'd from the reach of Cattel.

Thirdly, Your Trees are faſten'd in the Hillock againſt the violence of Winds without Stakes to fret and canker them.

Fourthly, If the Soil be wet, it is hereby made healthy.

Fifthly, If very dry, the Hillock defends them from the outward Heat.

Sixthly, It prevents the Couch-graſs, which for the firſt Years inſenſibly robs moſt Plants in ſandy Grounds apt to Graze. And,

Laſtly, The grazing Bank will recompence the niggardly Farmer for the waſte of his Ditch, which otherwiſe he will ſorely bethink.

In the ſecond or third Year (by what time your Roots ſpread) the Trench, if the Ground be moiſt or Seaſon wet, will be near fill'd up again by the treading of Cattel, for it needs not be cleanſed; but then you muſt renew your Thorns: Yet if the Planter be curious, I ſhould adviſe a caſting of ſome ſmall quantity of rich Mould into the bottom of the Trench the ſecond Year, which may improve the Growth, and invite the Roots to ſpread.

In this manner of Planting, where the Soil is not rich, the exact Planter ſhould add a little quantity to each Root of Earth from a frequented Highway, or Yard where Cattel are kept. One Load will ſuffice for ſix or ſeven Trees, this being much more proper than rotten Soil or looſe Earth, the fat Mould beſt agreeing with the Apple-Tree.

The broader and deeper your Ditch is, the higher will be your Bank, and the ſecurer your Fence; but then you muſt add ſome good Earth in the ſecond Year, as before.

I muſt ſubjoin, that only Trees of an upright growth be thus planted in open Grounds, becauſe ſpreading Trees will be ſtill within reach of Cattel as they increaſe. Nor have I met with any Inconvenience in this kind of Tranſplanting (which is applicable to all ſorts of Trees) but that the Mole and the Ant may find ready Entertainment the firſt Year, and ſometimes impair a weak rooted Plant, otherwiſe it rarely miſcarries. In ſum,

This manner of Fencing is ſoon executed by an indifferent Workman, who will eaſily ſet and guard ſix Trees in a Winter's Day.

I ſhall conclude this Point with giving a ſhort account of ſome of the beſt or moſt common ſorts of Apples, Pears and other Fruits that I have met with, with ſome Remarks upon the ſeveral ſorts, in order to procure a more exact account of them, which is a Work that will need more aſſiſtance exactly to perform than I am able to procure at preſent, every Country, and many parts of each Country, having ſome ſort of Fruit or other not known in the next; and therefore in the mean time the Rule that I ſhall adviſe moſt to obſerve is, to take an account of the beſt Bearers, and moſt uſeful ſorts of Fruits, and the particular Soils that they thrive and bear beſt in.

Chap. IX. *A Catalogue of Fruits,* &c.

THE Aromatick or Golden-Ruſſeting hath no compare, it being of a Gold-colour'd Coat under a Ruſſet Hair, hath ſome Warts on it, its Fleſh of a yellow colour, its form of a flattiſh round. This Fruit is not ripe till after *Michaelmas*, but keeps over the Winter; and is, without diſpute, the moſt pleaſant taſted Apple that grows, having a moſt delicate Aromatick reliſh, and melting in the Mouth.

The Orange Apple, ſo call'd from its likeneſs in colour and form to an Orange, deſerves the next place, having a fine rough Gold-colour'd Coat, reſembling the Golden Pippin, only fairer, keeps long, and is of a very pleaſant taſte.

The Golden Pippin is ſmaller than the Orange-Apple, elſe much like it in colour, taſte and long keeping, being the beſt of Apples for Cyder, Eating and Baking.

The Ruſſet Pearmain is a very pleaſant Fruit, continuing long on the Tree, and in the Conſervatory, partakes both of the Ruſſeting and Pearmain in colour and taſte, the one ſide being generally Ruſſet, and the other ſtreak'd like a Pearmain.

The Pearmain, whereof there are ſeveral ſorts, is ſo excellent an Apple, and ſo well known, that no more need be ſaid of it; only the larger ſort keeps not ſo well, neither is the Summer Pearmain ſo good as the Winter; they are all good Cyder-Apples, but no great Bearers.

Pippins are of ſeveral ſorts, and take their Name from the ſmall Spots or Pips that uſually appear on the ſides of them. Some are call'd Stone Pippins from their obdurateneſs; ſome are call'd *Kentiſh* Pippins, becauſe they are a Fruit that agrees well with that Soil; others are call'd *French* Pippins, having their original from *France*; which is the beſt bearer of any of theſe ſorts of Pippins, the *Holland* Pippin from the ſame cauſe, and the Ruſſet Pippin from its Ruſſet hue, with divers others denominated from the ſeveral places of their growth, but ſuch as are diſtinguiſh'd by the Names of Grey and White Pippins, are of equal goodneſs. They are generally a very pleaſant Fruit, and of a good Juice, fit for the Table, Conſervatory or Kitchen, but they are ſlender bearers.

The Golden Rennet is a very pleaſant and fair Fruit, of a yellow Fleſh, and the beſt of bearers for all ſorts of Soil, of which there are two ſorts, the large ſort and the ſmall; the ſmalleſt keeps the beſt, and is the beſt flavour'd, but the other is a meer Apple if kept after *November*, and neither of them good Cyder-Apples alone; but Mr. *Worlidge* commends them if mix'd with the *Red-ſtreak.* They ſell well in the Market, and are good eating Apples during the firſt part of Winter.

We have in *Eſſex* an Apple call'd a Snow Apple, which is an extraordinary certain bearer on the light brick Earths, but a very ordinary Apple of its kind; yet for its conſtant bearing I cannot but value it, for I had rather have any indifferent Apples, than none at all.

There is alſo in *Hertfordſhire* an Apple much reſembling a Gennet-Moil, which they call a *Wiltſhire*; it is both a good bearer and a good Cyder-Apple.

The Leather-coat or Golden Ruſſeting, as ſome call it, is a very good Winter Fruit, laſts long, and is of a good, firm and yellow Fleſh.

The Green Ruſſeting is a tough and hard Fruit that laſts long.

The Red Ruſſeting is of a leſſer ſize, long laſting, and are all of them of a pleaſant reliſh.

The Sharp Ruſſetting is an extraordinary bearer, and a good Cyder, and keeping Apple.

The *John* Apple, or *Deux-Ans*, ſo called from its continuing two Years before it periſheth, is a good reliſhed ſharp Apple, the Spring following, when moſt other Fruit is ſpent, they are fit for the Cyder Plantations being great bearers, and tho' dry Fruit they yield very good Juice, but muſt be ground before *January*. There is a Summer *John* Apple, that is very much commended alſo.

The Marigold Apple, ſo called from its being mark'd in even Stripes in the Form of a Marigold; ſometimes the Onion Apple, from the reddiſh brown colour reſembling a well-colour'd Onion; ſometimes call'd the Kate-apple, and ſometimes *John*'s Pearmain from its likeneſs to a Pearmain, is a very good Fruit, long laſting, and fit for the Table, Conſervatory, Kitchen or Preſs, yielding a very good Juice; it bears every other Year, even to admiration: There is another ſort of them call'd Summer Marigolds.

The Harvey Apple, and the round Ruſſet Harvey, are very pleaſant Fruit, and good Cyder-Apples, but are no good bearers.

The Queen Apple; thoſe that are of the Summer kind, are good Cyder-Apples mix'd with others, being of themſelves ſweet: The Winter Queening is good for the Table.

The Paradiſe Apple is a curious Fruit produc'd by grafting a Pearmain on a Quince.

The Pome-Roy is a Fruit of good taſte, a pulpy Subſtance, but not yielding much Juice.

The Pome-water is an indifferent good laſting Fruit.

The Golden Douſet, or Golden Ducket, is much commended.

The *Weſtbury* Apple taking its Name from *Weſtbury* in *Hampſhire*, from whence they are much diſperſed into the adjacent parts, is, as *Mr. Worlidge* ſays, one of the moſt ſolid Apples that grows, of a rough Rind and obdurate Fleſh, ſharp and quick taſte, laſts long, and yields a very excellent and plentiful Juice, making Cyder equal to the beſt of Fruits; and for the Kitchen, few or none exceed it.

The Gilliflower Apple is of a pleaſant reliſh and long laſting, of a thick Rind, hard Core, ſtrip'd, and a good Cyder-Apple, making an excellent mixture.

The *Margaret* Apple is the beſt and moſt early, uſually ripe about St. *Margaret*'s Day in *June*; it is a fair and beautiful Fruit, of a pleaſant taſte and ſcent, and deſerves a more general Propagation.

The Jenneting is next to be eſteem'd, as well for its early ripening as its pleaſant taſte.

The *Devonſhire* Quarrington is alſo a very fine early Apple.

The Summer Pippin is a very pleaſant Apple in colour and taſte, yielding a delicate Juice.

The Creeper is an Apple ſo call'd from the Tree, which grows low, and traileth its Branches near the Ground.

The Ladies Apple is very beautiful, and begins to be good about *December*, and laſts till *March* and *April*; it is a great bearer, and never wrinkles with keeping.

The Ladies Thigh is a kind of a Ruſſeting in ſhape and colour, with a very juicy and tender Pulp, a little musk'd; its Tree is very long before it bears, but afterwards produces abundance, and is ripe the beginning of *July*.

The Violet Apple is of a whitiſh ground Colour, a little ſpeckled in thoſe parts that are from the Sun, but ſtrip'd with a deep Red on the Sunny ſide; the Pulp is very fine and delicate, and is to be eaten as ſoon as gather'd, tho' it will continue good till *Chriſtmas*.

The Codling, ſo call'd from the uſe it is put unto, makes a good Summer Cyder, and is a good bearer, either in Hedges or Standards.

The Claret Wine Apple is fair, and yields plenty, of a pleaſant ſharp Juice, from whence it takes its Name; being well order'd it excells moſt other Cyders, eſpecially with a mixture of ſweet Apples.

The White Wining is a ſmall white Apple, and a good bearer, the Fruit juicy and pleaſant, but ſoon periſhing, and the Cyder made thereof ſmall.

The King Apple, tho' not common, yet is by ſome eſteem'd an excellent Apple, and preferr'd before the Jenneting.

The Famaguſta is alſo in the number of the beſt of early Apples.

The Giant Apple is a large Fruit, well taſted, and the beſt of any Summer Apple for the Kitchen.

The *Bontra-due*, or Good Houſe-wife, is the largeſt of Apples, a great bearer, good for the Kitchen. It makes good Summer Cyder.

The Cat's-head, by ſome call'd the Go-no-further, is a very large Apple, and a good bearer.

The Spicing Apple, of all Apples that are mark'd, Red is the meaneſt.

The Gennet Moil is a pleaſant and neceſſary Fruit in the Kitchen, and one of the beſt Cyder-Apples, and a good bearer.

The White Muſt is a very pleaſant Apple, yielding great plenty of Vinous Liquor, bearing this Name in *Herefordſhire*, and is thought by ſome to be the ſame with the Golden Rennet in *Hampſhire*.

The Red Muſt is alſo of the ſame Nature.

The Fox Whelp is eſteem'd among the choice Cyder-Fruits.

The Bromsbury Crab, altho' little better than the common, yet kept on heaps till *Chriſtmas*, yields a brisk excellent Cyder, and very ſtrong.

Eleots are Apples much in requeſt in the Cyder Countries for their excellent Liquor, but not known by that Name in ſeveral parts of *England*.

The Stocken, or Stoken Apple is likewiſe in eſteem there, altho' not known by that Name in many places.

The Bitter Scale is an Apple much eſteem'd of in *Devonſhire* for the excellent Cyder it yields, without the mixture or aſſiſtance of any other.

The Dean's Apple is there well eſteem'd of for the ſame reaſon.

As alſo is the Pleaſantine, perhaps the ſame with our Marigold.

The Pureling. Its Name is not uſual, but in the ſame Parts.

The Underleaf, whoſe Cyder is beſt at two Years; 'tis a very plentiful bearer, hath a Rheniſh Wine flavour, the very beſt of all Cyders of this kind; the Apples ſhould be hoarded a little within Doors; and the longer you would keep your Cyder, the longer you muſt hoard your Fruit.

A long, pale Apple call'd the Coleing, about *Ludlow*, is an extraordinary bearer.

The Arier Apple, a conſtant bearer, making a ſtrong and laſting Cyder; ſome call them *Richards*, ſome Grange Apples; and indeed they make ſo exceellent a Drink that they are worthy to be recover'd into uſe.

The Olive, well known about *Ludlow*, may, I conceive, be accounted among the Winter Cyder-Apples, of which it is the conſtant report, ſays Mr. *Evelyn*, that a Hogſhead of the Fruit will yield an Hogſhead of Cyder.

Fillets, whereof alſo there are the Summer and the Winter, in very high eſteem for the delicate Vinous Liquor they yield. The Summer Fillet for the preſent, and the Winter Fillet for laſting Cyder.

The Red-ſtreak, of all Cyder-Fruit, hath obtain'd the Preference, being but a kind of Wilding, and tho' kept long yet is never pleaſing to the Palate; there are ſeveral ſorts of them, the Summer and the Winter, the Yellow and the Red, and the more green Red-ſtreak: Some ſorts of them have red Veins running thro' the whole Body of the Fruit, which is eſteem'd to give the Cyder made thereof the richeſt Tincture if they are kept till mellow; the Cyder at firſt is very luſcious, but if ground more early, it is more racy.

The Quince Apple, ſo call'd from its Colour, is a good Table-Fruit as well as Cyder Apple.

The Nonſuch is a long laſting Fruit.

The Angel's Bit is a delicate Apple for taſte, and the Tree, or its Name, proper to *Worceſterſhire*, and thoſe parts.

The Peeling is a laſting Apple, makes very good Cyder, agrees well with this Air, and is a good bearer.

The Oaken-pin, ſo called from its hardneſs, is a laſting Fruit, yields excellent Liquor, and is near the nature of the *Weſtbury* Apple, tho' not in form.

The Greening is of a colour green, and keeps to a ſecond Year, and is a good Apple.

The Lording is a fair, green and ſharp Apple, a conſtant bearer, being a hardy Fruit, for the Kitchen only.

Sweet Apples there are of ſeveral ſorts, and their Names change in every place, ſo that they are rather known by their Colour and Size than their Names; there is one call'd the Honey-comb in ſome places, which is a fair Apple, and mix'd with other Fruit makes admirable Cyder; ſo doth the ſmall Ruſſet ſweet Apple, whoſe Tree is always Cankery.

Pome-appeaſe is an Apple newly propagated, the Fruit is ſmall and pleaſant, and yields no unpleaſant Scent; the Tree is a good bearer, and it is ſuppos'd that this is that which is call'd the Lady's Longing.

The Fig-apple is alſo newly propagated, the Tree yielding no Bloſſoms as is uſual with other Apple Trees, nor hath the Fruit in it any Core or Kernel, in theſe reſembling a Fig, and differing from other Apples, yet is a good Table Fruit, and laſting.

The *Sodom* Apple, or Bloody Pippin, is a Fruit of more than ordinary dark colour, and is eſteem'd a good Apple.

The *Muſcovy* Apple is a good Winter Fruit, and a great Curioſity, for that it is tranſparent.

Belle and Bon are of two ſorts, the Summer and Winter; it is a fair Apple, and a good bearer, but the Fruit not long laſting; it makes indifferent Cyder; the Winter Belle Bon is much to be preferr'd to the Summer in every reſpect.

The Pear Apple is a curious pleaſant Apple of a rough Coat, but is no good bearer.

There are alſo the Apples call'd Eſquire *Vernon*'s Apple, the Grutchling, the Pear Ruſſet, the *Stoak* Apple, the *Suffolk* Apple, which are much commended for the Table and Kitchen.

The Pell-Mell Apple, the Thrift Apple, and the Winter Glory are very good laſting Apples.

Crabs, when kept till they are mellow, may be reckon'd amongſt Apples, and being ground with other mellow Fruit, do much inrich the Cyder, and is the beſt refiner of foul Cyder.

The Caſtard Parſley Apple, the *William*, the Cardinal, the Short-ſtart, the Winter Red, the Cheſnut Apple, and the Great Belly, are in many places Apples of eſteem, but being not acquainted with them I can only name them. Many more there are both *French* and *Engliſh*, which either are not made familiar to us, or elſe are peculiar only to ſome Places, or their Names chang'd in moſt Counties, or elſe are of ſmall account, which to enumerate would be tedious and uſeleſs.

Chap. X. *Of Pears.*

THE next in eſteem are Pears, ſo call'd from their Pyramidical Form, whereof there are ſo great variety, that the Kitchen and Table may be furniſh'd throughout the Year with different Species.

The Early Suſan is the firſt ripe, being a ſmall round Pear, little bigger than a large Cherry, the Colour is green, and the Taſte pleaſant.

The *Margaret*, the *Maudlin*, the Cluſter Pear, the Lenthal Primet, the Sugar, the *Madera*, the Green Royal, *July* Pear, St. *Laurence*, Green Cheſil, and many other early Pears are in eſteem for the Tables in *July*; but after them you have

The *Windſor*, the Green-field, the Summer Burgamot, the Orange, the Sovereign, ſeveral ſorts of *Katharines*, whereof the Red *Katharine* is the beſt, the Denny Pear, *Pruſſia* Pear, Summer Popperin, Lording Pear, Summer *Bon Chreſtien*, the Orange Burgamot, *Hampden*'s Burgamot, Bezy de Hery; the Violet Pear, the Painted Pear, ſo call'd from its delicate ſtrip'd Colours; the Roſewater Pear, the Shortneck, ſo call'd from the ſhortneſs of its Form and Tail; the Binfield, or Dove Pear, the great Muck Pear, the great Ruſſet of *Remes*, Amadotte; the Rouſelet *Norwich* Pear, the Pomegranate Pear, ſo call'd from its ſhape, and the *Edward* Pear very pleaſant; the Meola ala Busk, Crown Pear, St. *Michael*'s Pear, *Carliſle* Pear, Roſhea, eſteem'd an extraordinary Pear, King *Katharine*, Rouſelet Pelit, Rouſelet Haſtife, Musk Blanquet, Dove, Musk Burgamot, Queen Pear, White *Robert* and the Deſirable Pear, are all very good Table-Fruit for their Seaſon before or at *Michaelmas*.

The *Bævre du Roy* is eſteem'd for the Table the beſt of all Summer Pears; 'tis a fair brown Pear and excellent in its Seaſon, melting in the Mouth, and thence call'd the Butter Pear, and bears well against a Wall. The green *Bævre* Pear is more green and larger than the former.

The *Lewis* Pear, or by ſome the Maiden-heart, is a very good bearer, and the beſt of all Pears to dry.

The Bloody Pear is a good Pear, taking its Name from the Red Juice it hath within its Skin, and is a very great Curioſity.

The *Engliſh* Warden, the *French* Warden, and the great *Spaniſh* Warden, the White Warden, the Stone Pear, the *Arundel* Pear, the Biſhop's Pear, the Caw Pear, Winter Musk Caſhurine, the Lady *Hatton*'s Pear, the Quince Pear, the Davis Pear, Malborne Pear, the Red *Roman* Warden, the Green Warden and Winter *Norwich* are excellent baking Pears.

The great black Pear of *Worceſter* or *Perkinſon's* Warden bears well againſt a Wall, they uſually weighing twenty Ounces, or more, and being twice bak'd with Sugar exceed moſt Fruits.

The Diego Pear, Monſieur *John*, the Gilliflower Pear, Pear Royal, Bowden Musk, *French* Violet Mogul Pear, Virgo, Lair, Sovereign Pear, Okenbury Pear, the White *Worceſter* Rouſelet-durine, *Montpelier* Imperial Pear, Pear *de Lyons*, a rare Winter Pear for the Table; the Burgamot Bougee, Rowling Pear, Balſam Pear, Bluſter Pear, Emperor's Pear, Queen-hedge Pear, Frith Pear, Brunſwick Pear, *Bing*'s Pear, Winter Poppering, Thorn Pear; the Portail, the Nonſuch Dioniere, Winter *Katharine*, Clove Pear, Lambert Pear, Ruſſet Pear, Saffron Pear, the *Petworth* Pear, or Winter *Windſor*, Winter Burgamot, Pound Pear and Hundred Pound Pear, Long Burgamot, Burncat, Lady Pear, Ice Pear, Dead-man's Pear, Bell Pear, the Squab Pear, Spindle Pear, Dogoniere, Virgin, Gaſcoign Burgamot, Scarlet Pear, and Stopple Pear, all are very good Winter Pears, and keep throughout the old Year.

Pears that uſually keep until the ſucceeding Spring are the *Bon Chreſtien*, the beſt of Winter Pears; the great Surrein, or Serene, Little Dagobert, the Double Bloſſom Pear, the longeſt liver of all, and takes very well in the Spring; the Oak Pear, the great Kairville, the little Black Pear of *Worceſter*.

Pears that are eſteem'd for their Vinous Juice in making of Perry in *Worceſterſhire*, and thoſe adjacent Parts, are the Red and Green Squaſh Pears, the *John* Pear, the green Harpary, the Drake Pear, the *Mary*

Pear, the Lullam Pear; but above the reſt are eſteem'd the Bosbury, and the Bareland Pears, the White and Red Horſe-pears, and above all, that which is moſt commended is the *Turgovian* Pear mention'd by Mr. *Evelyn.*

When I liv'd in *Hertfordſhire*, a poor Man brought me three or four Buſhels of ſmall Pears, which were very ſmall, hardly ſo big as the ſmalleſt Crabs, having ſomething of a muskiſh flavour, tho' with it ſo rough a taſte that the Hogs would hardly eat them; which made me think them a good Perry Pear, and accordingly I made Perry of them, which was ſo rough the firſt Year that no Body would drink it: But I found that as the roughneſs wore off, the fine flavour increas'd, ſo that at four Years of age it had the colour of Canary and was as ſtrong, and had as fine a flavour, being valu'd by all that taſted it before it; but the Man that brought them me dying before I knew the excellency of my Liquor, I could not be ſo certain of the Pear, as I might if I had had his Directions; there being three or four Trees cut down in the Field where he gather'd them. Since, I got ſome Grafts of a Pear juſt like it for ſhape and taſte, which I believe to be the ſame; but the Trees I have rais'd being not yet big enough to furniſh me with Pears to make the trial of their Juice, I cannot be poſitive of it till they do, which I mention only to adviſe others to more caution when they meet with any rarity of this kind.

Chap. XI. *Of Cherries.*

IN the next place the Cherry is admitted to be a Fruit of general Uſe, eſpecially for the Palate and for the Conſervatory. They are ripe on the Trees but three Summer Months, *May*, *June*, *July*, afterwards to be had only in the Conſervatory.

In *May* the Cherries then ripe are uſually ſo called from the Name of the Month, the Duke and Arch-duke, againſt a good Wall, are moſt Years ripe before the end of this Month.

In *June* are ripe the White, Red, Black and Bleeding Hearts, Lukeward, one of the beſt of Cherries, the Early *Flanders*, the Cluſter Cherry bearing three, four or five uſually on a Stalk, the White *Spaniſh* Cherry, the Amber Cherry, the Black *Orleans*, the White *Orleans*, Nonſuch, the *Spaniſh* Black and the *Naples*.

In *July* uſually ſucceed the Late *Flanders*, commonly call'd *Engliſh* Cherries, Carnations, a delicate Fruit for the Table or Conſervatory; Morella, or the Great Bearer, being a Black Cherry fit for the Conſervatory before it be through ripe, but 'tis bitter eaten raw, only it is to be eſteem'd being the laſt Cherry that hangs on the Tree, the *Morocco* Cherry, Great Amber, the Egriot, Bigarreaux, the Prince Royal, the *Portugal* Cherry, the King's Cherry, the Crown Cherry and the Biquar, both ill Bearers, the Great Purple Cherry one of the beſt and lateſt Cherries, and a good Bearer, the Ounce Cherry, ſo call'd from its fairneſs, the Dwarf Cherry, ſo call'd from the ſmallneſs of its Twigs and Fruit; there is alſo the common Black Cherry much in eſteem for its Phyſical Properties.

Chap. XII. *Of Plumbs.*

THERE is great variety of Plumbs, and they are alſo appropriated to ſeveral Uſes; they continue longer on the Trees than Cherries, and are by ſome eſteem'd a more pleaſing, but not ſo wholeſome a Fruit.

The firſt ripe are the Red, Blue and Amber Primordian Plumb, the Violet, Red, Blue and Amber, the Matchleſs, the Black Damaſcen, the *Morocco*, the *Barbary*, the *Myrobalan*, the Apricot Plumb, a delicate Plumb that parts clean from the Stone, the Cinamon Plumb, the King's Plumb, the *Spaniſh*, the Lady *Elizabeth*'s Plumb, the Great Mogul, and the Tawny Plumb.

After them are the White, Red and Black Pear Plumbs; the two former little worth, but the Black a pleaſant Fruit, the Green Oſterly Plumb, the Muſſel Plumb, one of the beſt of Plumbs, the *Catalonia* Plumb, much like the former; the White Prunella; the Black Prunella, the Bonum Magnum a fair yellowiſh green Plumb, excellent for the Kitchen and Conſervatory, the Wheaten Plumb, the *Laurence* Plumb an ill taſted Fruit, the Bole Plumb, the Cheſton Plumb; the Queen-Mother Plumb, one of the beſt ſort, the Diaper'd Plumb, the Marbled Plumb, and the Blue Marbled, the Damaſco Plumb, the *Foderingham* Plumb, the Blue and Green Pedrigon, and the White, not ſo good a Fruit, the Verdoch good only to preſerve; the Peach Plumb, the Imperial Plumb one of the largeſt of Plumbs, the Giant Plumb, the Denny Plumb, the *Turkey* Plumb, the Red, White and Green Peaſcod Plumbs; the White, Yellow and Red Date Plumbs; the Nutmeg Plumb, the Great *Anthony*, the *June* Plumb, the Prince Plumb, the laſt ripe and good for ſeveral Uſes. Many other ſorts of Plumbs there are whoſe Names are uncertain, and are therefore here omitted.

There are ſeveral other ſorts of Plumbs, as the Friars Plumb, Becket Plumb, Chryſtal Plumb, White Muſſel, White Prunella, *French* White Nutmeg Catholick Plumb, *Turkey* Plumb, Amber Plumb, and the Graſs Plumb, all of them curious and well taſted Fruits.

There are two ſorts of *Damaſcens*, the Black which is the moſt uſeful and beſt of all Plumbs; and the White which is not ſo good as the Red: Theſe are natural to our *Engliſh* Soil, as are the White and Black Bullace, whereof the White are pleaſant in *October* and *November*, and the Black neceſſary for the Kitchen in *December*, they uſually hanging on the Trees till *Chriſtmas*.

Chap. XIII. *Of Apricots, Peaches, Malacotounes and Nectarines.*

THE *Apricots*, ſo called from *Apricus*, delighting in the Sun, is a kind of Plumb, but far exceeding any of the former in every reſpect; whereof

The *Algier* Apricot is the earlieſt ripe; it is a ſmall round and yellow Fruit, ripe in *June*.

The Maſculine Apricot is a better and earlier Fruit than the former, but not ſo good a bearer.

The long White and Orange Apricot differ from the common Apricot, as their Names tell you; there is alſo the *Turkey* Apricot.

The Green *Roman* Apricot is the largeſt of all the kinds, and therefore beſt for the Kitchen and Conſervatory.

Chap. XIV. *Of Peaches.*

PEaches, from the *French* Name *Peſche*, are of longer continuance than Apricots, and of a more rich, noble Guſt and Flavour.

The moſt early are the Nutmeg, both White and Red, the *Troy* Peach, next the *Savoy* Peach, *Iſabella*, *Perſian*, the White Monſieur, *Newington* Bellice Peach to be preferr'd to the former, the Queen Peach, the *Magdalen* Peach, and the Double Bloſſom Peach.

After theſe come the Rambouillet, the Musk Peach, and the Violet Musk, both uſually eſteem'd the beſt of Peaches, the Crown Peach, the *Roman* Peach, Man Peach, Quince Peach, Grand Carnation, *Portugal* Peach, *Bourdeaux* Peach, late *Newington* Des Pot being ſpotted, *Verona*, *Smyrna*, *Pavia* Peach, and the *Coleraine* Peach; one of the lateſt is the Bloody Monſieur, an excellent Peach, very Red within and without.

The *Modena*, *Orleans*, Red Peach, *Morello Peach*, *Navarra* and *Alberges* are very good Fruit, and come clean from the Stone.

There are ſeveral other ſorts of Peaches, as the *Arundel*, the Admirable, the *Sion* Peach, the *Uvedale* Peach, the Superintendant, the *Eaton* Peach, the *Laurence* Peach, the *Mountaban*, the *Perſick*, the Minion, the Perprice, the Supreme Peach, and the *Arabian* Peach, all of them very curious Fruit. But the Ricket Peach hath lately gain'd the Reputation of being the beſt of Peaches.

Of Malacotounes, as much as to ſay, Apples with Cotton on them; there are two or three ſorts, but being late ripe, and old Fruit, they are not much valu'd.

Nectarines, of the ſavour and taſte of Nectar, are very pleaſant Fruit, whereof the Red *Roman* is the faireſt, and by moſt eſteem'd the beſt and moſt delicate Fruit for its guſt that this Iſland yields: By ſome the Muroy is preferr'd, by others the Tawny, neither of them ſo large as the Red *Roman*.

The Red or Scarlet Nectarine is by many much eſteem'd, becauſe it leaves the Stone.

Beſides all which, there are the Great Green, the Little Green, the Cluſter, the Yellow, the White, the Paper White, the Painted, the Ruſſet, the *Genoa*, the *Aegol*, the *Perſian*, and the Orbine Nectarines that are very good Fruit.

Chap. XV. *Of Quinces.*

THE *Portugal* Apple Quince is eſteem'd the beſt; it is a large yellow Fruit, tender, pleaſant and ſoon boil'd.

The *Portugal* Pear Quince is much like the former, except in its form.

The *Barbary* Quince is leſſer than the other, as is the *Engliſh* Quince, which is a harſh Fruit, and cover'd with a Down or Cotton.

The Lyon's Quince is a large Yellow, and the *Brunſwick* Quince a large White, both very good; but all inferior to the two firſt ſorts.

Chap. XVI. *Of Figs.*

FIGS are highly eſteem'd by ſome, whereof the Great Blue Fig is moſt accounted of; next unto it the Dwarf Blue Fig, being much leſs in Tree and Fruit, but better taſted, and ſooner ripe.

Chap. XVII. *Of the Cornel Tree.*

THE Cornel Tree beareth the Fruit commonly call'd the Cornelian Cherry, as well from the Name of the Tree as the Cornelian Stone, the Colour whereof it ſomewhat repreſents. This Fruit is good in the Kitchen and Conſervatory.

Chap. XVIII. *Of the Pruning of Fruit-Trees.*

IT conduceth very much to the proof and growth of a Tree to be well prun'd from its unneceſſary and injurious Branches:

If a Tree is to be tranſplanted, and you are oblig'd to leſſen the Roots by taking of it up, you muſt take care to leſſen the Head, that there may be a proportion between the one and the other; becauſe the Head depends upon the Roots for its Nouriſhment.

In *February* and *March* is the beſt time to prune Trees, only you muſt obſerve to prune the moſt luxuriant and vigorous laſt, and to cut your Boughs cloſe to the Body, where you cut them quite off; only Peaches and Nectarines are not to be cut till they begin to Bud.

The beſt time to prune Trees is in fair Weather, and in the decreaſe of the Moon.

You muſt not prune a Graft the firſt Year, tho' it ſhoot never ſo ſtrong.

But a Peach, the more it runs to Wood, and the ſtronger Shoot it makes, the better it will bear.

Wall-Trees are to be prun'd in Summer, and in Winter, the Summer pruning is to be about *June* or *July*, to take off the ſuperfluous Sprigs or Shoots of the ſame Years growth from Vines, Apricots, and other Trees that put forth large Shoots that impede the Fruit from its due Maturity, and contract much of the Sap of the Tree to themſelves, and thereby rob the other.

In Winter, as ſoon as the Leaves are off the Trees, you may prune and cut away the reſidue of the Branches, and place thoſe that are fit to be left in order: This Work may be continu'd throughout the Winter, except in great Froſts, and obſerve to cut away ſuperfluous Branches, or ſuch as croſs one another, or grow too thick, or that offend any other Tree, or Place, or that are broken, bruis'd or decay'd, and all the *Auguſt* Shoots, whereever you find them, unleſs the Place be naked, and that you ſuſpect the next old Branch will not ſuffice to cover it, and Branches that ſhade the Fruit too much.

In pruning of Trees, eſpecially Wall-Trees, be ſure to leave the ſmall Twigs that are ſhort and knotted, and that bloſſom'd the ſucceeding Year, for you may obſerve that moſt Apricots, Peaches, Plumbs, Cherries, *&c.* grow on theſe Sprigs, being uſually of two Years growth; they are therefore to be carefully nouriſh'd, and not cut off, as is uſually done to beautifie the Tree.

Every Bud which hath but a ſingle Leaf produces only Wood; but that of Fruit hath many Leaves, and the more it hath, the ſooner it will bear, and the greater will be its Fruit.

The Fruit-Buds which grow on the Body of the Tree, produce fairer Fruit than ſuch as break out of the collateral Twigs, and tops of Branches.

Rub off all the Buds which ſprout out either before or behind your Wall-Trees: And,

If you deſign to have your Tree ſoon furniſh'd on both ſides, hinder it from ſhooting in the middle; and note, that the more you prune a Tree, the more it will ſhoot.

Make as few Wounds in a Tree as you can, and rather extenuate a deform'd Branch, than haggle it in ſeveral places.

In Wall-Fruit cut off all groſs Shoots, how fair ſoever they ſeem to the Eye, that will not without much bending comply well with the Wall: For if any Branch happen to be wreath'd or bruis'd in the bending or turning (which you may not eaſily perceive) tho' it doth grow and proſper for the preſent, yet it will decay in time, and the Sap or Gum will be ſpewing out of it, which is the cauſe of the decay of many a good Tree.

In pruning of Trees or Vines leave ſome new Branches every Year, and take away (if too many) ſome of the old, which much helpeth the Tree, and increaſeth its Fruit.

When you cut your Vine, leave two knots at the next interval, for uſually the two Buds yield a Bunch of Grapes, the not taking care of which often makes Vines unfruitful.

If you cut off any Boughs or Branches, cut them ſloping, ſo as the Rain and wet may fall off from them, and near to a Bud, that they may the ſooner heal without leaving of any Stubs.

It is good alſo where your Tree is too full of Fruit to diſburthen it of ſome of them, and the reſt of the Fruit will be the fairer.

The great thing to be taken care of in pruning and nailing of Trees, is to ſpread it like a Fan, that it may handſomely cover the Wall. *See p. 394.*

Chap. XIX. *Of ſome other neceſſary Obſervations about Fruit-Trees.*

STrong or hot Dung is not good for Fruit-Trees till it is throughly rotten and cold, but on rich warm Land, Mud or Soil that lies in Streets or High-ways where it may be had, is beſt, eſpecially for Apple-Trees.

Many applying of Soil and Manure to their Trees, commonly lay it near to the Stems, whereas they ſhould lay it at a proportionable diſtance to the ſpreading of the Roots, according to the Age and long ſtanding of the Tree.

If you have an Orchard or other Plantation that is old, and you have a mind to extirpate it upon the account of the decay of the Trees, either ſet out freſh Ground, or dreſs and dig the holes a Year before you deſign to plant them, letting of them lie open to take the Air, that the Sun and Froſt may refreſh the Earth, and do not plant your Trees in the places where your old ones ſtood, leſt the old putrid Roots corrupt and ſpoil the young ones.

Winter Fruit, where there is Sun enough to ripen them, are more durable and laſting that grow upon ſtiff Land, and commonly the beſt flavour'd: But Trees that grow upon rich Land are the moſt thriving, and bear the largeſt Fruit, tho' not of ſo good a reliſh.

However, for them that live in the Northern parts of *England*, I would adviſe them to plant chiefly Summer-Fruit, becauſe the other ſeldom ripens kindly: Only this may be conſider'd, that where Plantations are upon a gravelly, ſandy, rocky or Lime-ſtreet Soil, there is at leaſt two degrees difference between ſuch a Soil in the North, and a cold Clay in the South. Beſides, the declivity of a Hill of a Southern Aſpect, being well ſhelter'd, gives a great advantage to the ripening of Fruit. All which things are neceſſary for a Planter to conſider, that he may accordingly ſuit his Plantation and Situation to one another.

Where Fruit-Trees are old, it is good to Prune or Lop them well, and to Manure them often with Dung, rich Earth, or, which is beſt, with Lime or Chalk, where it is to be had. Sir *Hugh Platt* adviſes the taking of two Quarts of Ox or Horſes Blood, and temper it with Pidgeons dung, till it make it into a ſoft Paſte, which he ſays is a moſt excellent thing to apply to the Roots of old Trees, the Roots being firſt open'd, and laid bare a few Days; this will recover a Tree or a Vine almoſt dead, and muſt be laid to the Tree about the midſt of *February*, and to a Vine about the beginning of *March*.

I ſhall conclude this part of Husbandry relating to Fruit-Trees, with Recommendations of the Vine, the Juice of which being ſo much deſir'd, and conſidering the Advantages that it brings to thoſe Climates and Countries that it is natural to; I could not omit it without making ſome Eſſay towards the Propagation of ſo uſeful and beneficial a Commodity, eſpecially ſince it is plain that Vineyards have formerly been in *England*, and that they are now in many Places of the ſame Climate with us, where they thrive to the great Advantage of the Owner; and therefore I cannot but think the want of *Engliſh* Wine to proceed only from Negligence, and our eaſie procuring of it by means of our Navigation, which tho' it may ſeem to be an increaſing of our Trade, yet it was procur'd upon a very uneven Balance while we had it from *France*. However, let any Commodity be procur'd upon the beſt Terms of Trade that can be propos'd, it is much ſhort of the Advantage that any thing of a Nations own Product will amount unto: And therefore I could wiſh that a greater Diligence were us'd for the Promotion of it, eſpecially in the South parts of *England*, which

I ſhould think the Eſſay of the Vineyards of that Worthy Gentleman Sir *William Baſſet*'s, near the *Bath*, ſhould incourage; ſince I have drank Wine made of his Grapes (as I have been inform'd) that I think was as good as any of the Wines that I have drank, either in *Paris* or *Campaign*. What Art was us'd to it I could not learn, but it is what I think is worth inquiring after; and tho', I ſuppoſe, I may not propoſe the ſame Method, yet when I come to treat of *Engliſh* Liquors, I hope I ſhall be able to do ſomewhat towards the Improvement of it; and therefore I ſhall at preſent confine my ſelf only to what relates to the Propagation and Culture of the Vine.

Chap. XX. *Of Vines.*

THE Vines moſt proper for our *Engliſh* Climate, I think are, Firſt, The ſmall black Grape, by ſome call'd the Currant, or Cluſter-Grape, which I reckon the forwardeſt of the black ſort. Secondly, The White Muſcadine, the Parſley-Grape, and the Muſcadella, which is a White Grape, not ſo big as the Muſcadine, tho' as ſoon ripe; and the White and Red-Frontiniaque, if planted in a very warm Place.

The beſt Soil for Vines, is the hotteſt Gravel, Sand or rocky Ground, provided they be kept well water'd and ſhaded at firſt planting; and if the aforemention'd Soils run much to Brambles, it is a promiſing ſign of the Vines thriving; but whatever the Soil be, it ought to be freſh, and not to have been plow'd up of a long time. The Soil will much forward their ripening, as I obſerv'd before.

The next Advantage to be given to Vines in theſe cold Climates, is that of a warm ſituation and good ſhelter, which the Declivity of an Hill lying to the South will beſt afford, eſpecially if well ſhelter'd from the North, and incompaſs'd with a good Brick-wall, becauſe Hills are not ſo ſubject to the Morning Fogs, nor infectious Miſts, as low Grounds are: Beſides, flat Land does not ſo ſoon enjoy the benefit of the riſing Sun; nor doth it ſtay ſo long upon them in the Evening; for ſince the Vine doth above all things affect a dry Soil, eſpecially after the Fruit begins to be form'd, and approach to its Maturity, there is nothing more noxious to it than at that Seaſon to be infected with the cold heavy Damps of theſe Fogs. It is in that as much as in any other thing, wherein our more Southern Climates have the Advantage of us.

Vines may be increas'd by Layers, which may be laid any time in Winter before *January*, and will often grow of Cuttings only ſtuck in the Ground in a moiſt Place, and well water'd in Summer, if it prove a dry time, or of Suckers.

For to plant a Vineyard, in *July*, when the Earth is very dry and combuſtible, plow up the Swarth and burn or denſhire it, as is before directed about plowed Land. In *January* following ſpread the Aſhes.

The Ground being thus prepar'd, make your Trenches croſs the Hill from Eaſt to Weſt, becauſe the Vines ſtanding thus in Ranks, the riſing and ſetting of the Sun will by this means paſs thro' the Intervals, which it would not do if they were planted in any other Poſition; nor yet would the Sun be able ſo well to dart its Beams upon the Plants during the whole courſe of the Day.

To plant the ſetts, ſtrain a Line and dig a Trench about a Foot deep, and ſet your Plants in it about three Foot diſtance every way one from another, trim off the ſuperfluous Roots of your Setts, and leave not above three or four Eyes or Buds upon that which is above the Ground, and plant them about half a Foot deep, ſetting of them ſloping as they commonly ſet Quick, ſo as that they may point up the Hill: Which being done, take long Dung, or Straw, and lay on the Trenches of a reaſonable thickneſs to cover the Earth, and to preſerve the

Roots from the dry piercing Winds which would otherways much prejudice them, and from the burning heat in Summer. Keep them well how'd and clean from Weeds, and if need be water them. The beſt time to plant them is in *January.*

The firſt pruning of the new ſet Vine, ought not to be till *January* after its planting, and then you ſhould cut off all the Shoots as near as you can, ſparing only one of the moſt thriving ones, on which you ſhould leave only two or three Buds, and ſo let it reſt till *May*, the ſecond Year after planting; and then be ſure to clear the Roots of all Suckers which do but exhauſt and rob your Setts, for the ſmall Branches of Vines produce no Fruit, and leave no Branches but what break out of the Buds you left before, continually taking care to ſuppreſs the Weeds. The ſame Method is to be taken the third Year, by cutting off all the Shoots in *January*, ſparing only one or two of the moſt thriving; which being done, dig all your Vineyard, and lay it very level, taking great care that in this Work you do not cut or wound any of the main Roots with your Spade: As for the younger Roots, it is not ſo material, for they will grow but the thicker, and this Year you may enjoy ſome of the Fruit of your Labour, which if anſwerable to your Expectation, will put you upon providing of Props for them of about four Foot long, which muſt be placed on the North-ſide of your Plant. In *May* rub off ſuch Buds as you think will produce ſuperfluous Branches. When the Grapes are about the bigneſs of birding Shot, break off the Branches with your Hand at the ſecond Joynt above the Fruit, and tie the reſt to the Prop. The beſt way is to break, and not cut your Vine, becauſe Wounds made with any ſharp Inſtrument are not apt to heal, but cauſe the Vines to bleed.

Fourth Year. The following Year after its bearing you will be likely to have three or four Shoots to every Plant, and therefore in *December* cut off all the Branches except one of the ſtrongeſt and moſt thriving, which leave for a Standard about four Foot high, cutting off the reſt very cloſe to the Body of the Mother-Plant, which tie to your Prop till it is big enough to make a Standard of it ſelf: And then you muſt ſuffer no Shoot to break out but ſuch as ſprout at the top about four Foot from the Ground, all which Sprouts the *French* Prune off every Year, and truſt only to the new Sprouts which are the only bearing Shoots. But others propoſe to leave two or three Branches, the one ſucceſſively after the other, and ſo they always cut off the oldeſt every Year, and Nurſe up the other young ones; but the number of the Branches ſhould be proportionable to the Thriftineſs of the Vine.

In *Auguſt*, when the Fruit begins to ripen, break off ſuch Shoots as you find too thick; but this Work you muſt do with Diſcretion, and only ſo as to let in the Sun for the ripening of the over-ſhadow'd Cluſters, but not to leave them too bare, leſt you expoſe them too much to the ſcorching Heat by Day, and the moiſt Dews by Night. If you find a Vine to bleed, rub ſome Aſhes upon it; and if that will not do, ſome commend the ſearing of it with a hot Iron.

When thro' often ſtirring of it you find your Vineyard poor (which the weakneſs of the Crop will ſoon diſcover) prune your Vine, as is before directed, and ſpread good rotten Dung mix'd with Lime, over the whole Ground, letting of it lie a whole Winter to waſh into the Ground, mixing of about ten Buſhels of Lime with a Load of Dung, and if ſome Aſhes or Soot be likewiſe ſpread on it, it will do well, which Manure turn in about *February* with a ſlight digging, but not too deep, which ſhould be perform'd in a dry Seaſon, and not in wet, leſt it occaſion the Ground to bind too much, and cauſe the Weeds to grow. But to forward Grapes ripening, and to make them fruitful, the Blood of Beaſts mix'd with Lime or Soot is very good to lay the Roots of the Vines in *December* and in *July*; and if the Seaſon is very dry, the watering of Vines in *Auguſt* is a great Advantage.

But in our cold Climate where we are oblig'd to plant them againſt a Wall, or other Shelter, Vines ſhould be prun'd only of thoſe Branches that are unthrifty, which are flat and grow dry in Winter; ſo that you perceive no Sap in them when you cut them, for the plenty of Grapes, which they cannot bear, extracts ſo much of the Nouriſhment of the Vine, that it will rather decreaſe every Year than grow too luxuriant. And beſides, the more Wood you have, the more Fruit you may expect, becauſe 'tis only the preſent Years Shoot that bears; and therefore take away as much of the old Wood as you can, that has only a few good Branches, and bend them downwards as low as you can well do, and from them will grow young Roots; but if they run too much to Wood, cut off the worſt of the Branches, rather than ſhorten them, becauſe it cauſes them to be rough, and not to ſhoot out young Branches.

Gather your Grapes in a dry Day, when they are very plump and tranſparent, which is when the Seeds or Stones are black and clear, not viſcous or clammy, when the Stalks begin to ſhrivel at the part next the Branch, which is a ſign it hath done feeding; only you muſt take care if Rain come, and Froſt immediately follow, to gather them as ſoon as you can.

It is beſt to cut and not to pull the Grapes from the Vine, and to put them in Baskets, out of which, empty them gently, and lay them on heaps on a Floor, to ſweat for four or five Days, or a Weeks time, which will ripen them much.

If you would make Claret, let it remain with the Murc or Husks till the Tincture be to your liking, but the White Wine may be preſs'd out immediately.

When the White Wine is tunned, ſome propoſe to ſtop it up immediately, and ſay that it will not hurt the Cask, and leave half a Foot or more void ; and for Claret leave ſomething more, which they repleniſh at ten Days end (when the fury of working is over) with ſome proper Wine that will not provoke it to work again. This muſt be frequently repeated, for new Wine will ſpend and waſte ſomewhat till it is perfect.

This is the manner of *Languedoc*, and the Southern parts of *France*, and about *Paris* they let it abide with the Murc in the Muſt two Days and Nights for White Wines, and at leaſt a Week for Claret ; but then they obſerve to let it be well cover'd.

In ſome parts of *France*, they Tun it when it hath wrought in the Kelers, filling of it up (as before is deſcribed) with what is ſqueez'd from the Husk, which ſome think very practicable with us.

Whilſt the working and filling of it up continues, keep it as warm as you can, by cloſing up any Northern Windows, if you have any in your Cellar, leſt it ſour the Liquor, and about the expiration of *March*, ſtop your Veſſel for good and all. Some about this time roll their Cask about the Cellar to mix it with the Lees, and after a few days Re-ſettlement, they rack it off with great Improvement.

Wine to fine.

Put into your Veſſel the plaining, or chips of green Beech, the Rind being carefully peel'd off ; but firſt boil them in clean Water about an Hours ſpace to extract their rankneſs, and then dry them in the Sun, or an Oven : Leſs than a Buſhel of Chips will be ſufficient to fine a whole Tun of Wine, and it will ſet your Wine in a gentle working, and purifie it in twenty four Hours, giving of it a good and agreeable Flavour.

Theſe Chips may be waſh'd again, and will ſerve the better upon the like Occaſion, even till they are almoſt conſum'd. Let your Chips be planed off as long and large as you can get them, and put them in at the Bung.

Some ſweeten their Wines (to prevent harſhneſs) with Raiſins of the Sun trodden into the Fat being a little plump'd before, or by boiling one half of the Muſt or Liquor in a Veſſel for an hour, ſcumming of it, and tunning of it up hot with the other.

English Wine. But the beſt Method that I have met with to make *Engliſh* Wine, is after the Grapes are pick'd from the Stalks to preſs them, and to let the Juice ſtand twenty four hours in the Fat, draw it off from the groſs Lees, and put it up into a Cask, and to every Gallon of Juice add a Pint or Quart of ſtrong Red or White Port, according as you deſire it in ſtrength. Let it work together, and when it hath done, Bung it up cloſe, and let it ſtand till *January*, at which time in dry Weather Bottle it; this way I have made as good Wine, as any *French* Wine without any Adulteration, which conſiſting of four parts of our own Product, and but one of Foreign, muſt be of advantage for the promotion of our own Grapes.

Chap. XXI. *Of gathering of Fruit.*

YOUR Trees having attained to their deſir'd end of bearing Fruit, it will be neceſſary to conſider the Methods to be us'd in gathering, tranſporting and keeping of it.

Gathering of Fruit. As to the gathering of Fruit, care muſt be taken to do it without bruiſing, eſpecially of ſuch as you deſign to keep, and that you do it when they are arriv'd at their due Maturity, at which time they are not only beſt for eating, but keeping too. Fruit ripens ſooner or later, according as the ſort is, and the Seaſon of the Year falls out, or that they are ſituated and ſhelter'd, and that the Soil is either hot or cold. But the beſt time for the gathering of Winter-Fruit, is about *Michaelmas* after the firſt Autumn-Rains come, when the Tree, being ſobb'd and wet, ſwells the Wood, and looſens the Fruit: Or when the Froſts advertiſe you that 'tis time to lay them up, beginning to gather the ſofteſt Fruit firſt, but mind never to gather Fruit in wet Weather.

Tranſporting of Fruit.

For the Tranſportation of Fruit, or the carrying of it to Market, *&c.* Apricots, Peaches, Figs, Strawberries, Cherries, Raſberries, *&c.* require Water-carriage, or to be carried on Men's Backs; but for Peaches or Apricots, they ſhould be laid upon that part that the Stalks grow out of without touching of one another, and to be laid upon a Bed of Moſs, Fern or Leaves, or to be wrapped up in Vine Leaves. And in Caſe ſeveral Beds be laid one upon another, a good quantity of Moſs ought to be laid between them.

Figs are very tender, and therefore each Fig ſhould be wrapped in a Leaf, and ſmall Partitions made with Splinters, like the bottom of Sieves, to part each Layer in the Basket, that ſo they may not lie one upon another.

Plumbs may be put in a Basket without any other ceremony, than the laying of Leaves at the bottom and top.

Strawberries and Raſberries are commonly put into ſmall Baskets made on purpoſe for them, and the Leaves laid at top and bottom, and ſtuffed by the ſides.

Apples and Pears are commonly pack'd in Baskets, with a good quantity of Straw at the bottom and top.

As to the preſerving of Fruit, if it is Summer-Fruit (eſpecially Peaches) they muſt be laid in a dry place on Shelves with the Windows always open, and upon dry Moſs, or other ſoft things that have no ill ſcent or ſavour; for Peaches like Melons eat better for being gather'd a day or two before they are eaten. All Fruits muſt be viſited daily, and the rotten ones pick'd out, leſt they ſhould infect the other. Pears may be plac'd with their Eye downward, but beware of laying of them or Apples upon Hay, Wheat or Rye Straw, which will give the firſt an ill flavour, and leave the other none; the beſt Straw is that of Oats, but Fern or Blankets is much better.

The beſt way to keep Grapes is to hang them up in the Air faſtned to a Packthread; but if any are deſirous to preſerve them till towards Spring, they muſt be gather'd before they are perfectly ripe, and care muſt be taken conſtantly to pick out thoſe that are rotten. Some ſay, the beſt way to keep them, is to hang them up in a Barrel, which muſt be headed up ſo cloſe that no Air may come at them. Some lay them in a Cask in Oat-chaff.

But as Apples and Pears are of long duration, it will be neceſſary for thoſe that are curious in keeping of them, to have a Conſervatory or Storehouſe made after this manner: Chooſe ſome place in your Houſe the moſt convenient for this purpoſe, which ſhould have the Windows and Overtures narrow, to prevent the extremity both of heat and cold. Theſe ſhould always be kept ſhut except in very fine Weather.

About the Room ſhould be Shelves made one above another, and the middle be left to lay Fruit in on heaps, ſuch as are the moſt common, or that you deſign for Cyder; but if your Room be narrow, then only Shelves on one ſide, and the two ends will be enough.

Let your Shelves be laid upon Brackets, being about two Foot wide, and edg'd with a ſmall Lath to keep the Fruit from rowling off of them, placing of them about a Foot aſunder.

And as you gather your Fruit, ſeparate the faireſt and biggeſt from the middling, and ſuch as are fallen off of themſelves, or that were thrown down in gathering: And putting each ſort into Baskets, as faſt as you gather them, carry them into your Store-houſe, and range them upon your Shelves, ſo as that they may not touch one another, laying of Fern under them, and having of a good quantity more of Fern by you, cover them well up with it, and in caſe of Froſt you may lay Blankets and other things to ſecure them; but in very ſevere Froſt, ſome commend a wet Sheet to lay over them, as the beſt thing to preſerve them. Be ſure your Fern is very dry, and let it be cut in Summer while the Sap is in it, and that it have contracted no ill ſavour or muſtineſs.

And every other day look carefully to the Apples and Pears, and take out all that are ſpeck'd or rotten, leſt they infect the others.

As for the time of Fruits being in Seaſon and their laſting, I ſhall have occaſion to mention a great number of them in the Kalendar.

BOOK XV.

Chap. I. *Of Engliſh Liquors.*

HAving given an account of the way of ordering, managing and improving of Corn and Fruits; I ſhall in the next place endeavour the Improvement of *Engliſh* Liquors, which is a part of Husbandry that I think is too much neglected; and therefore I ſhall give the beſt help towards it that I can, and begin with Beer, as the moſt common Liquor, and what for the want of good Management, is generally the moſt ſpoil'd, of any Liquor we make.

Chap. II. *Of Beer and Ale.*

IN the brewing of Beer, two things muſt particularly be taken care of ; Firſt, Good Malt, which I have already given an Account how to make. And, Secondly, Good Water that is ſoft, and will bear Soap, for harſh Water makes not only unpleaſant Beer or Ale, but likewiſe requires much more Malt than ſoft, and that in proportion to the harſhneſs or ſoftneſs of it ; and laſtly, Being provided with good Hops,

Firſt, Heat a Hogſhead of Water, and cover it with Bran ; when it is ſcalding hot, put one third part of it into the Maſhing-tub, and there let it ſtand till the Steam is ſo far gone that you make ſee your Face in the Liquor, then ſtir in four Buſhels of Malt, and let the remainder of the Water in the Copper boil a little, then draw out the Fire, that the heat of the Water may be qualify'd before you put it to the Malt, and when it is of a due heat, add it to the other part that was put into the Maſhing-tub before, and ſtir it well again, putting up two or three Shovels full of hot Wood-coals upon it, to take off any ill Taint of the Malt: Then let it ſtand two Hours, in that time heat a Hogſhead more of Water ; and when your firſt Wort is drawn off, put part of it upon the Grains, and ſtir in three Buſhels of freſh Malt, then add the reſt of the Water and ſtir as before ; after which put your firſt Wort into the Copper again, make it ſcalding hot, and put part of it into a ſecond Maſhing-tub, and when the Steam is gone, ſtir in three Buſhels of freſh Malt, then put up the reſt of the Wort, and ſtir it well, as before, letting of it ſtand two hours, and put another Hogſhead of Water into your Copper, and when what was put in the firſt Maſhing-tub has ſtood there two Hours, draw it off, as alſo that Liquor in the ſecond Maſhing-tub, and take the

Grains out of the ſecond Maſhing-tub, and put them into the firſt, and put the Water that was ſcalded in the Copper to it, which let ſtand in the Maſhing-tub an Hour and an half at moſt; and while that is ſtanding get ready another Copper of Water (the Copper containing about a Hogſhead) which put upon the Grains, and let it ſtand as before; only Note, that in all the Maſhings (when you think that the Liquor hath ſtood long enough upon the Malt) before you let it run out, you draw out ſome of the Liquor firſt, and ſee if it run clear; if it doth, draw it off; if not, fling it up again, and let it ſtand till it doth. Then take the firſt Wort and boil it with two Pound of Hops, two Hours, or till you find it look curdly; after which boil the ſecond Wort for Ale an Hour and an half with three quarters of a Pound of Hops, and the Hops that were boil'd in the firſt and ſecond Wort, boil in the remaining Liquor an Hour and half, which quantity will make a Barrel of Strong-Beer, and a Barrel and a half of Ale, and one Hogſhead and a half of Small-Beer. This is the beſt way of brewing your *March* and *October*-Beer.

But for the brewing of Small-Beer, or common Ale, take ſomething above the quantity of a Barrel of Water ſcalding hot, which put into your Maſhing-tub alone; let it cool till you can ſee your Face in it, and put to it four Buſhels of Malt, pouring of it in by degrees, and ſtirring of it well: Let it ſtand on the Malt two Hours (obſerving the ſame Method as before propos'd for Strong-Beer) then draw it off, and let it boil an Hour and an half in Summer, or an Hour in Winter; and when it is boil'd enough, it will look curdled. Of this firſt Wort you may make a Barrel of Ale: After this is boil'd, ſcald about a Barrel of Water more, and put it upon your Malt, letting it ſtand an Hour and an half: This draw off, and put the ſame quantity of hot Water on again, obſerving the ſame Rules, as before directed, of this you may make an Hogſhead of Small-Beer. When you put it together to Work, take care that it is not too hot, and when you put Yeaſt to it, put it to a ſmall quantity at firſt, and add more and more to it by degrees, and when it hath work'd twenty four Hours in the Tub, Tun it up. But if you brew Small-Beer alone, two Buſhels of Malt and a Pound and a half of Hops will make a Hogſhead of good Small-Beer.

Theſe Proportions of Brewing are for a ſmall Family, which I chuſe to inſtance in, becauſe others may eaſily proportion it to larger Quantities as they pleaſe.

To what hath been already montioned, I ſhall add the manner of brewing of Ale and Beer, publiſh'd by Sir *Jonas Moor* in a ſmall Treatiſe of his; which as it contains a great many Particulars, and is recommended from his own Experience, may be of uſe to the Publick, which take in his own Words.

In the brewing of Ale and Beer, after you have made a diſcreet choice of your Materials, you muſt firſt conſider what ſort of Drink you deſign to Brew, and accordingly proportion your quantities. If you deſign your firſt Wort for Strong-Ale, or *March* or *October*-Beer, you muſt proportion five Gallons of Drink to every Buſhel of Malt (that is to ſay avoiding Fractions) eleven Buſhels of Malt to an Hogſhead of Ale or Beer. But it muſt be remembred, that in ſo great a diſproportion of Malt Drink as eight to five, almoſt a third of your Liquor in the firſt Wort will be abſorbed by the Malt never to be return'd, and an allowance is to be made of about a ſixth part to be evaporated in boiling; ſo that if you expect to clear a Hogſhead of Drink, that is, fifty four Gallons, from your firſt Wort, you muſt put into your Maſh-tub near ninety Gallons of Liquor. But for your ſecond or third Worts, the Malt being wet before, you need put up no more Liquor than you intend to make Drink, except an Allowance of about a tenth part for waſte, that not boiling ſo long as your firſt Wort: And you may of your ſecond Wort make one Hogſhead of good middle Beer or Ale as ſtrong as the common Ale-houſe Drink in *London*; and your third Wort will make one Hogſhead of good Small Beer.

I propoſe, in this Caſe the drawing off three Worts, becauſe of the great quantity of Malt to a ſmaller of Liquor; otherwiſe in ordinary Brewings, where you deſign not very ſtrong Drink, ſix or ſeven Buſhels of Malt will make one Hogſhead of good Strong and another of Small-Beer. And in ſuch Caſes two Moakſes will as well take out the ſtrength of your Malt, as three in the other.

The proportion of Hops may be half a Pound to an Hogſhead of Strong-Ale, one Pound to an Hogſhead of ordinary Strong-Beer to be ſoon drunk out, and two Pounds to an Hogſhead of *March* or *October* Beer. And for the after Worts which are not to be kept long, what comes from the firſt Wort will ſerve well enough to boil again with them.

If you put into your firſt Wort a greater proportion of Hops, and boil them all the while your Wort boils, you will make it too bitter. But I conceive it adviſable to double the proportion by taking out the firſt Parcel, when your Wort has boiled half the time you deſign it; and then adding the ſame quantity of freſh Hops, to continue boiling till you take your Wort out of the Copper. This will ſomewhat encreaſe your Charge, but that will be very inconſiderable, if you furniſh your ſelf in a cheap Year of Hops.

Hitherto of the Qualities and Proportions of your Materials; now concerning the manner of putting them together.

After you have put your Liquor into your Copper, ſtrew an handful, or two or three handfuls of Bran or Meal upon it, not ſo much to ſtrengthen your Liquor, as to make it heat quickly, for ſimple Water alone will be long e'er it boil. But you muſt take your Liquor out of the Copper, when it begins to ſimmer, and not ſuffer it to boil; for tho' it were granted that the boiling did no harm to your Liquor, by evaporating the natural Spirit of the Water; yet it is a needleſs expence of Fuel and Time, firſt to make it too hot, and after to ſtay till it is cooler again. For you muſt by no means mix your Malt with boiling hot Liquor, which will make Malt clot and cake together, and the moſt flowery parts of it run whitiſh, glewy and ſizy, like Sadlers Paſte, ſo that it will never mix kindly, nor give out its ſtrength equally to the Liquor.

I had not dwelt ſo long on this Head, but that I know many put their Malt firſt in the Maſh-fat, and then pour in their Liquor for the firſt Wort, which is indeed neceſſary in the ſecond and third Worts.

The contrary Practice of putting in your Liquor firſt hath theſe Advantages;

Firſt, You can never otherwiſe gueſs when your Liquor is juſt cool enough to be mingled with your Malt. But in this caſe you have a certain Criterion and Rule to judge, that is, you muſt let your Liquor remain in your Maſh-fat, till the Vapours from it be ſo far ſpent, that you can ſee your Face in the Liquor: And then pouring your Malt upon it, you have this further Advantage, that you keep your Liquor longer hot, and it ſinks gradually, diſtributing its ſtrength to your Liquor equally without matting; and if it does not deſcend faſt enough of it ſelf, you muſt preſs it down with your Hands or Rudder, with which you uſe to ſtir your Malt or Moaks. This muſt be done by degrees, always remembering that you ſhake your Sacks before you remove them over the ſide of your Maſh-fat, to get out the Flour of your Malt which ſticks to them; and after all your Malt is ſettled, and your Liquor appears above it, you muſt put up in your Maſh-fat as much more hot Water out of your Copper, as will make in all ninety Gallons for one Hogſhead: Then ſtir it almoſt without ceaſing, till it has been in the Maſh-fat about two Hours from the firſt putting up your Malt, in which your Servants may help and relieve one another.

After this pull out your Rudder, and putting a little dry Malt at top, cover it cloſe, and let it ſtand half an Hour undiſturbed, that it may run off clear, and the Malt being ſunk to the bottom, the Liquor at top will run thro' it again, and bring away the ſtrength of it. After this, you muſt lift up your Tap-ſtaff, and let out about a Gallon, not into your Tub underneath or underback, which is to receive your Wort, but into your long Hand-jet, and put it back again, ſtopping your Tap-hole: This do two or three times, till you find it runs clear, which it will not do at firſt, tho' your Tap-hoſe be never ſo well adjuſted.

Throughout the whole courſe of your Brewing, you muſt be very careful to do all you can to promote the fineneſs and clearneſs of your Drink.

In the North of *England*, where much the beſt Malt-drink is made, they are ſo careful of making their Drink fine, that they let their firſt Wort ſtand in their Receivers till it is very clear, all the groſs Parts being ſunk to the bottom; this they continue to do about three Hours in Summer, and ten or twelve Hours in the Winter, as occaſion requires, which they call Blinking: After which, leaving the Sediment behind, they only lade out the clear Wort into the Copper. This Cuſtom is peculiar to the North, and wholly unpractis'd in other parts.

When all is run out into your Receiver or Underback, Lade or Pump out your ſecond Liquor, ordered ſo as to be then juſt ready to boil, on your Moaks, and putting your firſt Wort in your Copper again, let it boil reaſonably faſt (which boiling, the Hops put on it will much accelerate) for about one Hour and an half for *March* or *October-Beer* to keep long, and one Hour for Strong-Ale to be drank new. I know that a longer boiling is generally adviſed; but that I ſhall anſwer when I come to ſhew the Reaſons, why common Brewers ſeldom or never make good Malt-drink. I adviſe the Wort rather to be boiled reaſonably faſt for the time, than to ſtand ſo long to Simmer, becauſe common Experience ſhews it waſtes leſs, and ferments better after ſo long boiling than ſimmering.

Your firſt Wort being thus boiled, muſt be pump'd or laded off into one or more Coolers, or Cool-backs, in which leave the Sullage behind, and let it run off fine. The more Coolers, and the thinner it ſtands, the ſooner it cools (eſpecially in hot Weather) the better; let it run from your Cool-back into your Tun very cool, and ſet it not there to Work in Summer till it is cool as Water. In Winter it muſt be near Blood warm at leaſt; the Bowl in which you put your Yeaſt to ſet the reſt on Working, muſt have a mixture of Wort hot enough to make it all ferment: When you find it begins to Work up thick to a Yeaſt, mix it again with your Hand-jet: And when it has wrought it ſelf a ſecond time to a Yeaſt, if you deſigned it for Ale, and ſpeedy drinking, and hopped it accordingly, beat in the Yeaſt every five Hours for two Days together in the Summer time, or more, according as the Weather is, and for three or four Days in the Winter, covering your Fat cloſe, that it fall not in your Working-Tun.

When your Yeaſt begins to Work ſad, and upon the turning of the Concave of your Bowl downwards ſticks faſt to the inſide, then skimming off the Yeaſt, firſt cleanſe the reſt into your Veſſel, leaving all your Dregs in the bottom of your Tun, and putting only the clear up. After it has a little fermented in your Veſſel, you will find it in a few Days fine and fit for your drinking, tho' according to the quantity of your Hops, you may proportion it for longer keeping.

If you Brew in *March* or *October*, and have hopped it for long keeping, you muſt then upon its ſecond Working to a Yeaſt (after once beating in) cleanſe it into your Veſſel with the Yeaſt in it, filling it ſtill as it Works over, and leaving when you ſtop it up a good thick head of Yeaſt to keep it.

In brewing *March* and *October*-Beer, it is adviſable to have large Veſſels; bound with Iron Hoops containing two, three or four Hogſheads, according to the Quantity you intend to make, putting all into one Veſſel; this ſort of Drink, keeping, digeſting and mellowing beſt in the largeſt Quantities.

Your Veſſels muſt be Iron-hoop'd, elſe your *March*-Beer will be in danger to be loſt or ſpoil'd; leaving your Vent-peg always open palls it; if it happens to be faſten'd but ſix Hours together in the Summer, a ſudden Thunder or ſtormy Night may happen next Morning to preſent you in your Cellar an empty Veſſel, and a cover'd Floor.

It is pretended, that *March* is the beſt Month for brewing, and the Water then better than in *October*; but I always found that the *October*-Beer, having ſo many cold Months to digeſt in, proves the better Drink by much, and requires not ſuch watching and tending as the *March*-Beer doth in opening and ſtopping the Hole on every Change of the Weather.

Many Country Gentlemen talk of and magnifie their ſtale Beer of Five, Ten or more Years old; it is true, more Malt and Hops than I propoſe will keep Drink longer than I uſe to do; but to ſmall purpoſe, for that it will not exceed mine in any thing deſirable, except ſuch an extraordinary ſtrength as few Men care for: I always broach mine at about nine Months end, and my *March*-Beer at *Chriſtmas*, and my *October*-Beer at *Midſummer*, at which time it is generally the beſt; but will keep very well in Bottles a Year or two more. Stop your Veſſel cloſe with Cork not Clay, and have near the Bung-hole a little Vent-hole ſtopp'd with a Spile, which never allow to be pull'd out till you bottle or draw off a great quantity together; by which means it is kept ſo cloſe ſtopp'd, that it fluſhes violently out of the Cock for about a Quart, and then ſtops on a ſudden, and porles and ſmiles in a Glaſs like any bottled Beer, tho' in the Winter time. But if once you pull out the Vent-peg to draw a Quantity at once, it will ſenſibly loſe this briskneſs, and be ſome time before it recovers it.

I propoſe no Directions for the ſecond and third Worts; he that can manage the firſt well, can never fail in the reſt. Your third Wort being pour'd on hot Goods, may be only cold Water.

But which is the beſt Method to be us'd, I muſt refer to Experience.

Chap. III. *Of* Nottingham-*Ale.*

THE chief thing that they obſerve in making of it, is, only when it is working, to let it ſtand in a Tub four or five days before they put it into the Cask, ſtirring of it twice a day, and beating down the Head or Yeaſt into it; this gives it the ſweet Aleiſh taſte.

If Ale or Beer do not fine well, put into a Hogſhead two or three Bottles of old ſtale Beer or Ale, and it will much help it.

Chap. IV. *Of Cyder.*

NEXT unto Beer, Cyder is of the moſt common uſe, of which excellent Liquor there are ſeveral ways of making it according to the Skill of the Operator, and the Palates of thoſe that are to drink it, ſome eſteeming one ſort of Cyder beſt, and ſome another, according to the Fruits it is made of, and the Methods us'd by them that make it.

Now Cyder-Fruit may be reduc'd to two ſorts or kinds, either the wild, harſh and common Apple growing in great plenty in *Hertford*, *Worceſter* and *Glouceſterſhires*, and in ſeveral other adjacent places in the Fields and Hedge-rows, and planted in ſeveral other Places of *England* for Cyder only; which are not at all tempting to the Palate of a thieviſh Neighbour, nor requiting the Charge and Trouble of the more reſerv'd Incloſures.

Or the more curious Table-Fruit, as the Golden Pippin, the *Kentiſh* Pippin, and Pearmain, *&c.* which are by many preferr'd, having in them a more cordial and pleaſant Juice than other Apples.

For the former, the beſt ſorts for Cyder are found to be the Red-ſtreak, the White Muſt, the Green Muſt, the Gennet Moil, *Eliot*'s Stocken Apple, Summer Fillet, Winter Fillet, Broomsbury Crab, the Olive Under-leaf Apple, and the Fox Whelp; the Cyder of which comes not to be good till 'tis three or four Years old.

The greater part of them being meerly Savage and ſo harſh that hardly Swine will eat them, yet yielding a moſt plentiful, ſmart and vinous Liquor, comparable, if not exceeding the beſt *French* Wine; and for the advantage of planting of them they claim the Preference before Pippins, or any other of our Garden-Fruit.

The other ſorts of Fruit for the making of Cyder are, as I ſaid before, the Golden Pippin, Kentiſh Pippin, Pearmain, Gillyflower, Kirton Pippin, Mother Pippin, *&c.*

The beſt ſorts of Cyder-Fruit are far more ſucculent, and the Liquor more eaſily divides from the Pulp of the Apple than in the beſt Table-Fruits.

Some obſerve, the more red any Apple is the better it is for Cyder, and the paler the worſe, and that no ſweet Apple that hath a tough Rind is bad for Cyder; but the more inclinable to yellow the fleſhy part of an Apple is, the better colour'd the Cyder will be.

Gathering of Apples.

Apples of a bitter taſte will ſpoil your Cyder, but the Juice of them, and of Crabs, will make as good Spirits as the beſt Apples when fermented; for neither the ſowre nor the bitter taſte ariſes with the Spirit.

Let your Apples that you make Cyder of be thorough ripe, and be carefully gather'd without Bruiſes in dry Weather; it very much conduces to the goodneſs and laſting of the Cyder, to let them lie a Week or two on Heaps; the harſher and more ſolid the Fruit is, the longer they may lie, and the more mellow and pulpy the leſs time, which makes them ſweat forth their Aqueous Humidity, and digeſteth and meliorates the remaining Juice, but they will yield more from the Tree, than ſo kept.

Such as are windfalls, bruis'd, or any ways injur'd, or unripe Fruit, divide from the ſound and ripe.

For it is better to make two ſorts of Cyder, the one good and the other bad, than for all to be bad; the ſooner ſuch Fruit is preſs'd the better; and from your Apples take away all Stalks, Leaves and rotten Apples; becauſe Stalks and Leaves give an ill taſte to the Cyder, and rotten Apples make it deadiſh.

Let ſuch Apples as fall before they are ripe be kept till the time of the full maturity of the other Fruit, or elſe the Cyder will not be worth drinking.

About twenty or twenty two Buſhels of good Cyder-Apples, juſt gather'd from the Tree, will make an Hogſhead of Cyder; after they have lain a while in heaps to mellow, about twenty five or thirty Buſhels will make an Hogſhead.

They that have great Quantities uſually grind their Apples with a Horſe-mill, ſuch as the Tanners grind Bark with, but the new invented Engine deſcribed in Mr. *Worlidge*'s *Vinetum Britannicum*, is a very good Mill, and will grind a great quantity.

After your Apples are ground they ſhould be made up in Straw, or in an Hair Bag, and ſo committed to the Preſs; of which there are ſeveral ſorts, but the Screw-Preſs is the beſt.

But as there are ſeveral ways of making of Cyder, as well as ſeveral ſorts of Fruit to make it of, and that ſome eſteem one ſort of Cyder, and ſome another, according to the manner of its making, and the Fruit is made of, as I ſaid before, I ſhall endeavour to give you ſeveral of the Methods I have met with, and leave them to your Experience. But,

I think the chief way of improving of this Liquor would be a particular Management of it according to the Species of Apples it is made of (eſpecially what is made of the chief Cyder-Apples.)

Chap. V. *Several Ways and Methods of making Cyder.*

As firſt that of Mr. *Worlidge*, who propoſes, that when your Cyder is preſs'd out it ſhould ſtand a Day or two, or more, in an open Tun, or cover'd only with a Cloath or Boards to keep it from Duſt, or in a Hogſhead or other Veſſel not quite full, with an open Bung, till the more groſs Parts ſubſide, and then to draw it into Pails, and fill it up into the Veſſels you intend to keep it longer in, leaving about an eighth part empty. Set theſe Veſſels in your coldeſt Cellars or Repoſitories with the Bung open, or cover'd only with a looſe Cover, that there may be a free Perſpiration of the Volatile Spirit of your Muſt, which would otherwiſe force its way, and that your Muſt may be cool and not kept warm, leſt it ferment too much.

Thus ſtanding open, the better it will by degrees let fall its groſſer Parts, and in time become clear without the loſs of any of its true and durable Spirits. For coldneſs is here the cauſe of its purifying, warmth occaſioning the ſolution and detention of thoſe Particles that ſpoil the Colour and Taſte of Cyder, and which would otherwiſe precipitate.

As for the time of its ſtanding open in the Veſſel, it varies according to the nature of the Fruit; if the Fruit were mellow or ſweet, the more of the groſs Particles will be preſs'd out with the Liquor, and ſo the longer time will be requir'd for their Precipitation: But if the Fruit were hard or ſharp, the thinner doth the Liquor iſſue out of the Preſs, and the ſooner will your Cyder become fine: And you muſt be ſure to obſerve, that as ſoon as this Cyder of hard Apples is fine, you muſt draw it off from its precipitated Lees, leſt it become acid, or acquire ſome ill taſte from them.

This ſtanding open of the Veſſel cauſeth an expence of that Wild or Volatile Spirit, which being pent in, would beget a continual Fermentation, much prejudicing the Cyder; and in caſe it doth not otherwiſe work its way out, would in time break the Veſſel that detains it.

The principal Cauſe that there hath been ſo much bad Cyder made in moſt parts of *England*, was the too early ſtopping of it up: It being uſually preſcribed, and as uſually practis'd, that as ſoon as Cyder is preſt, ſtrain'd and fermented, they ſtop it cloſe with a very great Confidence; that unleſs it be cloſe ſtopped it will decay and become of no uſe; ſo that when theſe Cyderiſts have taken care for the beſt Fruit, and ordered them after the beſt manner they could, yet hath their Cyder generally proved pale, ſharp and ill taſted, *&c.* and all from the too early ſtopping of it. For the ſtopping of Cyder cloſe before it be fine, or with its *Fæces* in it (although precipitated) begets reiterated Fermentations, which Fermentations very much impoveriſh this Liquor by precipitating thoſe Particles which enrich it with Tincture and Guſt.

Whilſt its groſs *Fæces*, or any ſettling remain in the bottom, every change of Weather cauſes ſome Motion therein, which is uſually term'd Fermentation; this doth ſo attenuate this Liquor, that it eaſily letteth or ſuffereth thoſe Particles to ſubſide, and leaveth the Cyder thin, jejune, acid and ill-taſted. It is thin and jejune, becauſe it hath loſt its Subſtance; acid, becauſe it hath loſt its Sweetneſs; thoſe Particles being the Saccharine Subſtance, or part of the Apple, and of ill Savour and Guſt, becauſe thoſe Particles, when precipitated, being mix'd with the more groſs, do putrifie and heat, infecting the whole Maſs in the Veſſel: All which effects are apparently obvious in Cyder made after the vulgar Method. Theſe *Fæces* are the cauſe, that the Corks fly out of the Bottle, or break the Bottles, or at leaſt at the opening of them make the Cyder fly, and mixing with it make the reſidue unpleaſant.

Theſe things being generally taken notice of, have ſet many Heads at work to provide Remedies: Some have made uſe of many ways to ferment it and make it clear by reiterated Fermentations; others by Additions, as Iſing-glaſs, *&c.* have enforced a Precipitation, and when they have ſo done, finding it to be thin, pale and acid, have by Moloſſes, Treacle, or courſe Sugar given it Body, Colour and Guſt. What delight or pleaſure there can be in drinking ſuch Compounds, or how much this muſt conduce to Health and long Life, I leave every unprejudiced and ingenious Man to judge.

After your Cyder hath ſtood open ſome reaſonable time, till it is become indifferently fine, which it may be in three, four or five Weeks, then will it be convenient to draw it into Bottles, if you have a ſufficient Stock, or into other Casks, that it may there become more fine; for after it is ſeparated from its groſs *Fæces* it will more eaſily remit the remaining Particles or flying Lee, than it would have done whilſt the groſſer parts remained, renewing its Fermentation on every change of Air, or other accidental Occaſion.

Its Fineneſs will ſometimes plainly appear if you move the Scum aſide with a Spoon, or the like; but to be more exact, you may take a Glaſs Pipe of a Foot or more in length, open at both ends, ſtop the upper end of the Pipe with your Thumb, and let the other end down into the Cyder as deep as you think fit, then open the upper end, by removing your Thumb, and the Cyder will riſe in the Pipe; then ſtop the upper end again with your Thumb, and take out the Pipe and hold it over a Drinking-glaſs, remove your Thumb, and you may there diſcern the ſtate and fineneſs of your Cyder.

If your ſtock of Cyder be not over-great, or that you are willing to preſerve your choiceſt ſorts of Cyder, the beſt way is to have large Glaſs-Bottles of one or two Gallons apiece, more or leſs, enough to receive the ſame, into which draw off or rack your Cyder, and let the Bottles ſtand open, or but barely covered, in your cooleſt Repoſitory for a Month, or more, till you obſerve your Cyder, by your interpoſing it between a Candle and your Eye, to be very tranſparent; which then may be call'd Superfine, the remaining Particles, or flying Lee, being precipitated and ſettled in the bottom of the Glaſs-Bottle.

If the Quantity of your choiceſt Cyder be too great for your Bottles, you may inſtead of them make uſe of Stone-Bottles, or Jarrs, or Stounds of *Flanders* Earth, or glaz'd Earthen Veſſels, the larger the better; which may be plac'd in Rows in your Repoſitories, Cellars or Vaults, and cover'd with Boards or the like, to preſerve your Cyder from Duſt, *&c.* but not from the Air; but by reaſon that you cannot ſo eaſily diſcern the fineneſs of your Cyder in theſe as in the tranſparent Veſſels, you may now make uſe of your Glaſs Pipe before-mention'd.

The reaſon why Glaſs-Bottles, or other glazed or ſtone Veſſels are more fit for this ſecond fineing than thoſe of Wood, is, for that the coolneſs of the Veſſel very much contributes to the Precipitation of thoſe remaining Particles that would otherwiſe debaſe this Liquor.

But if your quantity of Cyder be ſo great, that theſe Veſſels cannot receive it, then may you rack it into other Veſſels made very clean, dry and ſweet, and ſuffer'd to ſtand ſlightly cover'd till it be very fine before you ſtop it up: If you find that your Cyder doth not fine in wooden Veſſels ſo ſoon as you deſire, for want of that coolneſs that is in glazed Veſſels, you may take Flints or Pebble Stones clean and dry, and put them into your Cask of Cyder, this is ſaid (and with great probability) to contribute much towards the nimble Precipitation of the *Fæces*; the like effect hath the applying of a Bag of Salt to the outſide of the under part of the Veſſel.

When your Cyder has attained its utmoſt degree of fineneſs, which after this way of ordering it will do if you have but patience to let it ſtand open long enough (altho' ſome will fine in half the time that other requires) then take your Glaſs, Syphon or Crane, and draw it off from its laſt *Fæces* into ſmaller Bottles, wherein you intend to keep it for your uſe. Thus being drawn off, and thoroughly depurated, you may cloſe cork all your Bottles, and place them in your cool Conſervatory, where, after a few Weeks ſtanding, your Cyder will acquire a fine briskneſs, and mantle in the Glaſs, without any manner of Feculency, and retain its firſt Sweetneſs, and change from a pale to a lively Canary, or *Malaga* Colour; but if you have occaſion to accelerate its Maturity, place ſo many of your Bottles as you think you may have ſudden occaſion for, in ſome place warmer than your uſual Conſervatory, and it will ſoon anſwer your Expectation.

Sometimes it will happen, that the next Summer after it is become ſo pure, ſome Rags or flying Feculencies may appear in your Bottles, which are occaſion'd by the warmth of the Seaſon begetting another Fermentation from that fatneſs of the Body of the

Cyder made of a ſweeter ſort of Fruit, which are not apt to appear in the thinner Cyder; but in ſome ſhort time theſe will ſubſide, and you may draw off the Fine from the *Fæces* with your Syphon, without any great prejudice to your Cyder. Theſe later Fermentations in great Quantities of Cyder often ſpoil it for want of a timely prevention, which cannot be ſo well done in Veſſels of Wood as thoſe of Glaſs, where you may eaſily perceive the various Changes that may happen in theſe Liquors. Thus far you have Mr. *Worlidge*'s Opinion of this Liquor.

Mr. Cook'*s way of making of Cyder is after this manner.*

Let your Fruit hang till through ripe, which is beſt known by the brownneſs of the Kernels, or their rattling in the Apple, or the Apples falling much in ſtill Weather; for if the Fruit be green, your Cyder will be ſowre. Gather your Apples dry, and reject ſuch as are bruiſed, becauſe they will rot and ſpoil the taſte of the Cyder.

If you gather not by hand, which is tedious, lay a Truſs of Straw beneath the Tree, and over that a Blanket, diſcreetly ſhaking them down, not too many at a time, but often, carrying them where they are to ſweat, which ſhould be on dry boarded Floors; by no means on Earth, unleſs ſtore of ſweet Straw lie under them. In about ten or fourteen Days they will have done ſweating, then grind or beat them, keeping the Fruit ſeveral, in caſe you have enough to fill a Veſſel of one kind; if not, put ſuch together as are near ripe, for its more uniformly fermenting: Winter-Fruit may lie three Weeks or a Month e'er you grind them; the greener they are when gather'd, let them lie the longer.

Being ground let them continue twenty four hours before preſſing, it will give it the more Amber bright colour, hinder its over-fermenting, and if the Fruit were very mellow, add to each twenty Buſhels of Stampings ſix Gallons of pure Water pour'd on them ſo ſoon as beaten; the ſofter and mellower the more Water to reſtrain its over-working, and tho' the Cyder be weaker it will prove the pleaſanter: For over-ripe and mellow Fruit let go ſo much of the looſe and fleſhy Subſtance thro' the Percolation, that with difficulty you will ſeparate the Lee from the Liquor before it ferment, and then away goes the brisk and pleaſant Spirits, and leave a vapid or ſour Drink contracted from the remnant groſs Lees; the Cyder made of ſuch Fruit, had need be ſettling twenty four hours in a large Fat or Veſſel, that the *Fæces* may ſettle before you tun it up, and then draw it off, leaving as much of the thick Lee behind as you can (which yet you may put among your Preſſings for a Water Cyder): If you conceive your Cyder ſtill ſo turbid that it will work much, then draw it into another Veſſel by a Tap two or three Inches from the bottom, and ſo let it ſettle ſo long as you think it is near ready to work; for if it work in your Tubs, but little of the groſs Lees will you be able to get from it. *Note*, That you muſt cover it all the time it is in your Tubs, and the finer you put it up in your Veſſels, the leſs it will ferment, and the better it will drink; but in caſe you chill the Cyder (as it often happens in cold Winter Weather) ſo as it doth not work when put into Casks, caſt into it a Pint of the Juice of Alehoof, with half the quantity of Iſing-glaſs to refine it, which tho' it do not ſuddenly, at the Spring it will.

Theſe Directions obſerv'd, barrel it up, and when it ceaſes working, Bung it cloſe, and reſerve it ſo till 'tis fit to Bottle, that is, when fine, ſince till then it will endanger their burſting; and if you would have it very brisk and cutting (which moſt affect) put a little lump of Loaf Sugar into every Bottle.

Or you may obſerve the following Method, which is, That after your Cyder is preſs'd, to ſtrain it, and put it into a Tub or Fat with a Tap to it, which cover cloſe with Sacks or Cloaths, by which means ſome of the Spirits will have liberty to evaporate; whereas, if you put it too ſoon into a Cask, it will reverberate the Spirits too ſoon into the Liquor, and cauſe a Fermentation before any of the groſs Liees are ſeparated from it; for the great thing to be taken care of in making of Cyder, is, only to let ſo much of the Spirit evaporate as may prevent its fermenting before the groſs Lees are ſeparated from it, and yet to keep Spirits enough to cauſe a Fermentation when you would have it; for if it ferment too much it will loſe its Sweetneſs, and become harſh and ſmall; and if it ferment not at all it will become dead and ſowre, and therefore let it ſtand twenty four hours or more in the Fat, according as you find it inclin'd to work, ſo let it ſtand longer or a ſhorter time; and when you draw it off leave as much of the groſs Lees as you can behind, for Lees of Cyder are apt to put it into a new ferment upon all Changes of Weather. After it hath ſtood its time in the Fat, put it into the Cask, which fill almoſt full; but if you find it begin to work much, rack it off again, and take out the groſs Lees; and if you find it ſtill upon a fret, repeat the ſame Operation till you can ſettle it; for it is a very tickliſh Liquor, and very ſubject to ferment, eſpecially if the groſs Lees are not timely ſeparated from it, and therefore if unſettled or moiſt Weather happen at the time of its working, it will be ſo much the more difficult to manage, and will require the more care to be taken of it.

When it hath done working, ſtop it up, only leaving a ſmall vent hole at your firſt ſtopping of it up, at which you may ſometimes try if it want vent, leſt it break your Cask.

Only I think it neceſſary to premiſe, that the ſuiting of the Fruit to the Soil is a great Advantage to the making of Cyder, it being certain, that in many Places, even in the ſame County, there is much better Cyder made in one Place than another, tho' both are made the ſame way, and of the ſame ſort of Fruit; and if particular Remarks were made of the nature of ſuch Soils, and what the natural Production of them is, according to the nature of the ſeveral Soils already treated of, I believe it would be of advantage to Planting, and the Improvement of Fruit and Cyder.

Mr. *Worlidge* commends very much brackiſh Lands near the Sea-ſide, as excellent for Fruits, and for Winter laſting Fruit, the ſtrong ſtiff Lands are much the beſt of any.

But if your Fruit be unripe, or your Cyder ſmall, and that you have a mind to ſtrengthen it, eſpecially if you live in the North-country, you may improve it by the following Receipts.

Raiſin Cyder.

Take Pippins, Pearmains, *&c.* and to every Gallon of Juice put two pounds of Raiſins, which ſhred ſmall, cover the Fat, and let them ſtand two or three days; draw off the Liquor by a Tap, preſs out the Raiſins, and put both Liquors into a Cask that they may ferment, and after a fortnight rack them off. Do not fill the Cask you draw it into, but leave ſome room for it to ferment in; after which ſtop it cloſe, only leave a Foſſet-hole open or looſely ſtopp'd; and when it hath done working, fill up the Veſſel, and when fine, bottle it: Or you may do it another way.

Take your Apples when they reliſh beſt, not too green nor too mellow: They who have large Plantations may ſhake their Trees a little, and gather thoſe that fall off eaſily, and preſs them the ſame day. Fill not your Cask above three quarters full, and let it ſtand till it grow clear, which is commonly within eight or ten days, and then draw off only the clear, and fill up a clean Cask almoſt to the top, giving it vent thrice a day, leſt it ſhould burſt the Veſſel, and ſo continue to do for a Week.

Then for every ten Gallons of Cyder take one pound of Raiſins of the Sun, and put them into Brandy for a day or two, and then take only the Raiſins, and put them into the Cyder, letting it ſtand three or four days more: Laſtly, ſtop the Cask very cloſe, but bottle it not till *March*, except it be of Codlings, which will not keep ſo long.

Another Improvement of Cyder is, what they call Royal-Cyder, mention'd by Sir *Jonas Moor*, which is done by adding of the Spirits to it, which corrects the Windineſs and Crudities of the Cyder, makes it very agreeable to the Stomach, and gives it the ſtrength of Wine, by adding the goodneſs of two Hogſheads into one: To do which, put one Hogſhead of Cyder into a Still, and draw off all the Spirits; after which diſtil the ſaid Spirits a ſecond time, and put the ſame into your other Hogſhead, and fill it up. Stir it about well, and keep it cloſe ſtopp'd, except one day in ten or twenty let it lie open five or ſix hours, and within a quarter of a Year, this Cyder will be as ſtrong or ſtronger than the beſt *French* Wine.

But if you will have it drink like Canary you muſt add more of the Spirits, and as much Sugar or Sweets (the making whereof is hereafter ſhew'd) as will beſt pleaſe your Palate. And as the proportion of one Pint of good Spirits to a Gallon will make it as ſtrong as *French* Wine, ſo one Pint and half will make it as ſtrong as *Spaniſh* Wine: And by this means, in the like manner, Perry, the Juice of Cherries, Mulberries, Currants, and Gooſeberries, may, by adding thereto their proper Spirits, or any other convenient Spirits, be made as ſtrong as Wine.

I mention other Spirits, becauſe Brandy-Spirits of Wine and of Grain, tho' they will do well, yet they are not ſo natural and good as what is made of the ſame ſort of Fruit: And the Spirits made of Ale and Beer are the worſt of any, unleſs the Ale or Beer be mix'd with Cyder before the Spirits be drawn off; but the Spirits of Beer and Ale will do well to mix with the ſame kinds, and add very much to their ſtrength, being a mixture much uſed of late with *Derby* and *Nottingham* Ale, and with ſtrong Beer.

Only note, firſt, that the ſtale and ſour Cyder which is ſcarce fit to drink, will make the greateſt quantity of Spirits, and the beſt taſted, and that the longer the Spirits are kept, the leſs taſte they will have of the Fire; which is the greateſt Inconveniency that attends this way of making of Cyder; and therefore I ſhould propoſe, when you deſign to be any thing curious, to take only the firſt running of your Spirits to mix with your Cyder, and to let the ſmall part only be diſtill'd again, to which it will be beſt to allow as much age as you can to take off the burnt taſte: one Gallon of ſtrong Cyder will yield a Pint of Spirits.

As to the time of putting of your Spirits into your Cyder, obſerve, that the ſtaler your Cyder is before the Spirits are added to it, the more time it will take to incorporate, and the ſooner they are put in, the ſooner it will be fit for uſe, only be ſure that your Cyder has done working before you put it in.

The beſt way to order your Sugar before you put it into your Cyder is, to make it into a kind of Syrup or Sweets, by diſſolving of it in Water; one hundred weight will make ſixteen Gallons, and ſo proportionably. But before you put your Sugar into the Kettle, take the Whites of thirty or forty Eggs, the more the better; which being well beaten with a thing like a Rod, or a Whisk, in eight or ten Gallons of Water; put four Gallons of this Egg-Water ſo prepar'd into your Kettle, where your Sugar is to be diſſolv'd, then hang it over a gentle Fire, and ſtir it about till it is diſſolved: But be ſure when it boils, put in more Egg-water, to keep it from boiling too high, and ſo continue putting it in, one Quart after another, until all your Egg-water be ſpent. But to prepare your Egg-water in parcels, *viz.* a Quart or two at a time, as you uſe it, is the better way. Now the uſe of theſe Eggs is only to raiſe ſuch a Scum as will carry away not only all the foulneſs and groſſneſs of the Sugar, but all the Egg alſo. And when the Scum hath done riſing, and is clear taken off, then fill up your Kettle with as much Water as will make up your Quantity, and let it boil to the ſize of a Syrup, and being cold put it into your Cyder. But if you put in a little Coriander Seed bruiſed and tied up in a fine Linen Bag whilſt it's boiling, it will give it a fine grateful Scent.

Of theſe Stweets you may put in two or three Gallons, more or leſs, into an Hogſhead as your Palate invites you, or as the Tartneſs of your Cyder requires. But put them not in till you have racked your Cyder the laſt time, and that it is paſt the Fermentation. And before you put your Sweets into the Cask, mix your Sweets and the Spirits you intend to put in, together with a like quantity of Cyder, and ſtir them well together; then put all into your Cask of Cyder, and ſtir them with all your ſtrength with a ſtrong Staff in the Bung-hole for one half quarter of an Hour; after that ſtop it cloſe, and draw none off till two, three or four Months, by which time it will be anſwerable to what hath been propos'd, only remember, that if you would have it reſemble Canary, you muſt add the greater proportion of Spirits and Sweets; but if *French* Wine, the leſs Sweets, or none at all.

As to the ſort of Sugar, if the Sweets be made with white, the Cyder will remain pale; if of brown Sugar, it will raiſe it to an higher colour: And in my Opinion, the latter is as good as well as the cheapeſt, ſince the courſeſt, by the aforeſaid Preparation becomes as pure as the fineſt; and Sweets being thus made, will coſt but five Pence *per* Quart.

And thus every Man may merrily make his Varieties of Drink with that which he knows to be good, cheap and wholeſome, which is more than he is ſure to have at every Tavern, altho' he pay three times as much for it: Nor hath he ſo much reaſon to ſuſpect theſe Liquors in thoſe Houſes to be ſo much adulterated as the others, becauſe none of like goodneſs to the Eye, Scent and Palate can be afforded ſo cheap to the Pocket.

The husky part of the Apples, after the Cyder, is preſſed out, being ſteep'd two or three Days in as much Water as will cover it, and then preſs'd clean out, and kept in a Veſſel until it hath well fermented, as alſo the Lees of all your Cyder will afford Spirit or Brandy, ſo much, that being added to the Cyder of the ſame Apples, will make it as ſtrong as *French* Wine, which is a thing of great Advantage.

Spirits being put into Bottles amongſt Cyder, or of the aforeſaid Liquors will not drink well. I was a long time troubled to find how to make this Drink as palatable and pleaſing as it was become ſtrong and chearing, until I put both Cyder and Spirits into a wooden Cask. The firſt I compleated was in a Veſſel of ſix Gallons, into which I put two Quarts of the Sweets, and three Quarts of the Spirits of Cyder which after it had lain two or three Months I found to be as ſtrong and pleaſing as Canary.

By adding Wormwood to Cyder-Royal as you do to Wine, you may make it as good and grateful to the Stomach, both for procuring Appetite, and cauſing Digeſtion, as the beſt Purl-Royal, or Wormwood Wine. Thus you may have of your own growth Cyder-Royal, Goosberry, Currant, Cherry, *&c.* from the ſize of the ſmalleſt Wines to the ſtrength and goodneſs of the beſt Canary, ſuitable to all Seaſons of the Year, and to the Conſtitutions of all Perſons, and Humours of all Palates, and agreeable to all Ages, from Children of twelve Months old, to the heighth of Old Age.

This Cyder-Royal, or New-Wine thus prepar'd, may be kept in the Cask two or three Years, and be better'd thereby, provided you keep the Cask full; which to do, you muſt obſerve, that in two Months time the Liquor will waſte a Quart more or leſs, as the Veſſel is bigger or leſſer, which you ought to fill up again with Liquor of the ſame ſtrength, or if ſtronger the better: And by this means it may be kept, and grow better and better ſome Years without putting into it (as ſome are ſaid to do into their Liquors) Stum, or other unwholſome Ingredients. And, Suppoſe by keeping Cyder-Royal too long it ſhould become unpleaſant, and as unfit to Bottle as *Old Hockamore*, take but one Hogſhead of that, and one of tart new Cyder, and before the latter be quite clear or fine, mix them together in two other Hogſheads well perfum'd, and add of Spirits and Sweets a due proportion to the quantity of your new Cyder: Suppoſe it be in the Month of *October* or *November*, you may be ſure to have it full as good, if not better, than ever it was, and a moſt excellent Cyder-Royal to drink, or to bottle, by or before *Chriſtmas*; and your new Cyder cannot be made half ſo good by that time of the Year.

As to the Objections made againſt this ſort of Cyder, and the other particulars relating to it, I ſhall refer you to a ſmall Treatiſe of Sir *Jonas Moor*'s on this Subject.

Some commend very much the boiling of Cyder, as what gives a mighty ſtrength to it; but it is much better for ſome ſort of Fruits than others. The beſt ſort of Cyder for boiling being what is made of Pippins, Harvey-Apple, the Bitter Sweet (a *Dorſetſhire* Apple) whoſe Juice is much mended by boiling, eſpecially when kept to two Years old: The way of doing which is, to boil it as ſoon as it is preſſed; for if it ferments, the boiling will cauſe the Spirits to fly away inſtead of ſtrengthning it; ſtrain the Juice as it comes from the Preſs, and in boiling of it let it continually be ſcum'd, and obſerve the colour of it as it boils; ſo as not to boil it longer than till it comes to the colour of Small-beer: And as ſoon as it is cold, tunn it, leaving only a ſmall Vent in the Cask, the reſt being cloſe ſtopped; and when it begins to bubble out of the Vent, bottle it, only make it not of Fruit that hath been gather'd long.

But as Cyder is apt to contract an ill flavour from the Veſſel it is boil'd in, it is beſt to boil it in Tin or an Earthen-pot that is wide and open at the top, for the more expeditious waſting of the aqueous and phlegmatick part of the Liquor.

Of Mixtures with Cyder.

Tho' Cyder needs not any, it is yet a very proper Vehicle to transfer the vertue of any Aromatick or Medicinal thing, ſuch as Ginger, Juniper, *&c.* The Berries dried, ſix or eight put in each Bottle, or proportionably in the Cask, is very good: But this is not ſo palatable as wholeſome.

Ginger renders it brisk, and corrects its Windineſs; dried Roſemary, Wormwood, Juice of *Corinths, &c.* whereof a few drops tinge and add a pleaſant quickneſs, Juice of Mulberries, Blackberries, and (preferable to all) Elder-berries preſſed among the Apples; or if to the Juice you add Clove-gilliflowers dried and macerated, both for Tincture and Flavour, 'tis an excellent Cordial. Thus may the Vertues of any other things be extracted: Some ſtamp *Malaga* Raiſins, putting Milk to them, and letting them percolate thro' an *Hippocrates*'s Sleeve; a ſmall quantity of this, with a ſpoonful or two of Syrup of Clove-gilliflowers to each Bottle, makes an incomparable Drink.

Honey or Sugar mix'd with ſome Spices, and added to Cyder that is flat, revives it much, let the proportion be more or leſs, according to the quantity of your Cyder.

Mixture of Fruits is of great Advantage to Cyder, the meaneſt Apples mix'd being eſteem'd to make as good Cyder as the beſt alone, always obſerving, that they be of equal Ripeneſs: But the beſt mixture, Mr. *Worlidge* ſays, is Red-ſtreaks and Golden-Rennets together.

If you intend a mixture of Water in your Cyder, let it be done in the grinding, and it will better incorporate with the Cyder, than if put in afterwards.

Some Cyder will bear a mixture of Water without injury to its Preſervation, others will not; therefore be not over-haſty with too much at once, till you underſtand the Nature of the Fruit.

How to make Water-Cyder.

Boil'd Water ſuffer'd to ſtand (till cool'd) is beſt for this uſe, as being more defæcated. This ſmall Beveridge, or Cyderkin and Puree (as it is called) is made for the common drinking of Servants, *&c.* ſupplying the place of Small-beer, and to many more agreeable. It is made by putting the Murc into a Fat, adding what quantity of Water you pleaſe, namely, about half the quantity of preſs'd Cyder, or more; as you deſire it ſtronger or ſmaller. Note, that the Water ſhould ſtand 48 hours on it before you preſs it; when 'tis preſs'd, tun it up immediately, and it will be fit to drink in a few days, by clarifying of it ſelf. It is fortified by adding to it the Lees or Settling of better Cyder, putting it to the Pulp before Preſſure, or by ſome ſuperfluous Cyder which your Veſſels could not contain, or by grinding ſome fallen and refuſe Apples.

Cyderkin will be made to keep long by being boiled after Preſſure with ſuch a proportion of Hops as is uſually added to Beer; in which caſe, you need not to boil the Water before.

Some put in Ginger, *Jamaica* Pepper, and Bay Leaves, inſtead of Hops; which doth very well.

Some Obſervations relating to Cyder.

'Tis not good to grind or beat Apples in Stone Troughs, becauſe it bruiſes the Kernel and Stalks, which give an ill ſavour to the Cyder.

Let not your Apples be ground too ſmall, ſo as that too much of the Pulp may paſs with the Liquor, it being good to ſtrain it from the groſs Particles of the Apples before you put it into the Fat.

Fining of Cyder. Upon which account 'tis that the Juice of ripe pulpy Apples, as Pippins, Rennetings, *&c.* that are of a ſyrupy tenacious nature, do detain in them more of the diſpers'd Particles of the Fruit that by the Preſſure comes out with the Liquor; which Particles, or flying Lee being part of the fleſh or body of the Apple, is (equally with the Apple it ſelf when bruiſed) ſubject to Putrefaction, by which means by degrees the Cyder becomes hard or acid; whereas the Red-ſtreaks, Gennet-moil, *&c.* that more eaſily part from their Liquor without the adheſion of ſo much of the Pulp, are not ſo ſubject to reiterated Fermentation, nor to Acidity, as the other ſorts.

For Wine, Ale, Beer, and other Liquors, according as they tend more or leſs to Acidity, become clearer by the Precipitation of the groſs Lees, which being ſubject (as I ſaid before) to Putrefaction, according as the corrupt Particles are more or leſs in it, the Liquor becomes ſo much the ſooner or later Vinegar.

As for inſtance, in Beer, which when 'tis deſign'd for Vinegar is never fermented, nor the Fæces precipitated, as 'tis when preſerv'd for drinking.

And therefore if you intend your Cyder ſhall retain its full ſtrength, abſtract it from the groſs Parts, as I ſaid before.

Alſo Cyder made of green immature Fruit will not fine kindly; and when it doth, it abides not long good, but ſuddenly becomes eager.

Generally the Cyder that is longeſt in Fining is the ſtrongeſt and moſt laſting, eſpecially if the Fruit hath been kept ſome time.

But Cyder, or any other Liquor, will be much longer in clearing in mild moiſt Weather, than cold dry Weather or Froſt.

Iſing-glaſs

If your Cyder or other Liquor doth not fine, you may take of Water, Glue, or Iſing-glaſs, as 'tis commonly called, about the Proportion of three or four Ounces to a Hogſhead, beat it thin on ſome Anvil, or Iron Wedge, and cut it in ſmall pieces, laying of it in ſteep in White-wine (which will more eaſily diſſolve it ſelf than any other Liquor except Spirits) let it lie therein all Night, the next day heat it ſome time over a gentle Fire till you find it well diſſolved, then take a part of your Cyder, as about 1 Gallon to 20 Gallons, in which boil your diſſolved Glue, and put it into the whole Maſs of your Liquor, ſtirring of it well, and ſtopping of it cloſe, ſo let it ſtand to ferment eight or ten hours as you pleaſe; during which time the Glue being diſpers'd through the whole Maſs of the Liquor, it will precipitate the Lee. When you obſerve it hath done working, you may draw it out gently at a Tap below the Scum, or you may firſt gently take off the Scum, as you pleaſe: Or you may do it thus, Steep your Iſing-glaſs in White-wine, enough to cover it; after 24 hours beat the Iſing-glaſs to pieces, and add more Wine to it, and four times a day ſqueeze it to a Jelly, and as it thickens add more Wine to it: When 'tis reduc'd to a perfect Jelly, take about a Pint or Quart to a Hogſhead, and add it to three or four Gallons of the Cyder you intend to fine, and mix well with the Jelly; putting of it into your Veſſel of Cyder, ſtir it well with a Staff. This cold way is much better than the other; for boiling part of the Cyder makes it apt to decay the ſooner.

This Liquor, thus gently purified, you may in a full Veſſel preſerve a long time, or draw it and bottle it in a few days, there being no more Lee in it than is neceſſary for its Preſervation.

Casks for Cyder.

A great occaſion of ſpoiling of much Cyder, is the not having of good Casks for it, it being a Liquor very apt to attract any ill ſavour from the Veſſel; and therefore new Casks very much affect the Cyder with an ill ſavour and deep colour: Wherefore if you cannot obtain Wine-casks, which are the beſt, ſcald your Casks with Water wherein a good quantity of Apple pumice hath been boil'd, before you put your Cyder into them.

Put not Cyder into a Veſſel wherein Strong-beer, or Ale hath lately been, eſpecially Strong-beer; for it gives a very rank unpleaſant Taſte to Cyder, ſo doth a Cyder-Veſſel to Beer; therefore a Small-beer Veſſel is to be preferr'd.

If your Veſſel be tainted with any ill ſavour, boil an Ounce of Pepper in Water, enough to fill the Veſſel; put it in ſcalding hot, and let it ſtand therein two or three Days.

Or take ſome quick Lime, and put into the Caſk, which ſleck with Water, keeping of it cloſe ſtopped, tumble it up and down, till the Commotion ceaſe, and be ſure your Caſk be dry before you put your Cyder into it. But the moſt effectual Cure is to take them to pieces, and pare away the Film that is on the inſide, and when air'd ſet them together again.

Fuming a Cask.

If your Veſſel, before the Cyder is tunn'd up into it, be fum'd with Sulpher, it much conduces to the Preſervation of this or any other ſort of Liquor; which may be done by dipping of a Rag in melted Brimſtone, and by a Wire letting of it down into the Caſk, and fir'd ſo as to fill it full of Smoak: Upon which pour in your Liquor, which will give it no ill Taſte, and is an excellent preſerver of Health, as well as of the Liquor, and will much help to fine it. Or you may give your Caſk a fine ſcent by taking of Brimſtone four ounces, of burnt Alum one ounce, of Aqua Vitæ two ounces, melt theſe together in an Earthen Pan, on hot Coals, and dip therein pieces of new Canvas, and inſtantly ſprinkle thereon Powder of Nutmegs, Cloves, Coriander and Anniſeeds: Set this Canvas on fire, and let it burn to fume the Veſſel.

But the better way for this Operation is to have a little Earthen-pot to burn the Brimſtone in, to the Cover of which have one Pipe to go into the Caſk, and another to come into your Mouth, with which you may blow the Fume into the Caſk.

After you have cloſed up your Bung, you ought to leave open a ſmall Vent-hole, or but looſly put in the Peg, leſt the Cyder break your Caſk: In caſe the Liquor be unquiet, you may ſometimes try the ſtate of your Cyder by often opening of the Vent.

Cyder preſſed from pulpy, or thorough-ripe, or mellow Fruit, having lain long in hoard, is not ſo apt to emit its Spirits as the other, and ſo is more eaſily preſerv'd.

The upright Cask is moſt commended for Cyder, becauſe 'tis apt to contract a Skin or Cream on the top, which helps much to its Preſervation, and is in other Forms broken by the ſinking of the Liquor; but in this 'tis kept whole, which occaſions the briskneſs of the Drink to the laſt.

To occaſion Fermentation If Cyder do not work well, put a ſmall quantity of Lime to it, and it will cauſe it to ferment, not only by reaſon of its warmth, but of the quick Salt that is in it: The Powder of calcined Flints, Alabaſter, white Marble, Roch-alum, *&c.* is alſo good; but then the Cyder muſt be drank or bottled quickly.

The Shavings or Chips of Fir, Oak, or Beech, are great Promoters of Purification or Fermentation; and therefore a new Cask many times occaſions Cyder to ferment too much.

Ginger accelerateth the Maturation of Cyder, and gives it more brisk Spirits, helpeth Fermentation, promoteth its Duration, and corrects its Windineſs.

If Cyder hath any ill ſavour or taſte from the Veſſel, or any other cauſe, a little Muſtard-ſeed (ground with ſome of the Cyder, and put to it) will help it.

Reſtoring of Cyder. Deadneſs or Flatneſs in Cyder, which is often occaſion'd by the too free admiſſion of Air into the Veſſel, for want of right ſtopping, is remedied by grinding a ſmall parcel of Apples, and putting of them into it, ſtopping of it up cloſe, only you muſt ſometimes open the Vent that it force not the Veſſel; but then you muſt draw it off in a few Days, either into Bottles or another Veſſel, leſt the Murc corrupt the whole Maſs; which may alſo be prevented in caſe you preſs your Apples, and only put in the Juice: The ſame may be done in Bottles, by adding about a Spoonful or two of new Muſt to each Bottle of dead Cyder, and ſtopping of it again. Cyder that is dead or flat will oftentimes revive again of it ſelf, if cloſe ſtopp'd, upon the Revolution of the Year, and approaching Summer.

But Cyder that hath acquir'd a Deadneſs or Flatneſs by being kept in a Beer or Ale Veſſel, is not to be reviv'd again.

Wheat unground, about a Gallon to a Hogſhead, or Leaven or Muſtard, ground with ſome part of the Cyder, or rather with Sack, and put into the Cask, is us'd either to preſerve Cyder, or to recover it when acid; but the beſt Addition to preſerve it, is a Decoction of Raiſins of the Sun, or the new Lees of *Spaniſh* Wine.

Wheat boiled till it begin to break, and when cold put into the Cyder, but not in too great a quantity, and ſtirr'd well, will help it much; the like doth Cinamon: The Veſſel muſt be kept cloſe ſtopp'd.

But there is a difference between ſharp or acid Cyder, and a Cyder that is eager or turn'd: The firſt hath its Spirits free and volatile, and may eaſily be retriev'd by a ſmall addition of new Spirits, or ſome edulcorating matter; but the latter hath ſome of its Spirits waſted and decay'd, ſo that all Additions are but vain Attempts to recover it.

Thick Cyder may, by a ſecond Fermentation, be made good and clear; but acid Cyder is rarely recover'd.

Muſtard beat with Sack, and put to boil'd Cyder, preſerves it, and gives it good Spirits.

Two or three Eggs put into a Hogſhead of Cyder that is ſharp, ſometimes lenifies it; and two or three rotten Apples will ſometimes clarifie thick Cyder.

Wheaten-bran caſt into a Cask after Fermentation thickens the Coat or Cream, and much conduces to its Preſervation.

Bottling of Cyder.

Bottling of Cyder is the only way to preſerve it long, and it may be bottled two or three Days after 'tis well ſettled, and before it hath throughly fermented, if it be for preſent drinking; or you may bottle it in *March* following, which is the beſt time.

Bottles may be kept all Summer in cold Fountains, provided you pitch the Corks to prevent their rotting; or in Cellars, in Sand, if they are well cork'd: The longer they are kept the better, if the Cyder be good, and have a body,

After Cyder hath been bottled a Week (if 'tis new Cyder, elſe at the time of bottling) you may put into each Bottle a piece of white Sugar as big as a Nutmeg, this will make it brisk; but if the Cyder be to keep long, it will be apt to make it turn ſour.

If your Bottles are in danger of the Froſt, cover them with Straw; and about *April* put them into the coldeſt Repoſitories.

If your Bottles are muſty, boil them in a Veſſel of Water, putting of them in whilſt the Water is cold to prevent their cracking; and then ſet them on Straw, and not on a cold Floor, when you take them out.

When your Cyder is thus bottled, if it were new at the bottling, and not abſolutely fine, it is good to let the Bottles ſtand a-while before you ſtop them cloſe, or elſe open the Corks two or three Days after to give the Cyder Air, which will prevent the breaking of the Bottles againſt the next turning of the Wind into the South.

The meaner Cyder is more apt to break the Bottles than the richer, being of a more eager Nature, and the Spirits more apt to fly, having not ſo ſolid a body to detain them as the rich Cyders; and obſerve, that when any of the Bottles break thro' the Fermentation of the Cyder, to open your Corks, and give them vent, and ſtop them up again a-while after, leſt you loſe many for want of this Caution.

Great care is to be had in chooſing good Corks, much good Liquor being abſolutely ſpoil'd through the only defect of the Cork; therefore ſome much commend Glaſs-ſtopples.

If the Corks are ſteep'd in ſcalding Water a-while before you uſe them, they will comply better with the Mouth of the Bottle than if forc'd in dry; alſo the moiſture of the Cork doth much help it to keep in the Spirits.

Therefore the laying of your Bottles ſide-ways where your Liquor is very fine, ſo as that the raiſing of them may not diſturb the Settling, nor the Lee beget any new Fermentation in them, is a great advantage to any Liquor.

Chap. VI. *Of Perry.*

THE next Liquor in eſteem after Cyder, is Perry, the ordering of which being much the ſame with that of Cyder, I need not ſay much of it; only you muſt obſerve, not to let your Pears be over-ripe before you grind them, becauſe of their Pulpineſs, which makes them not eaſily to part with their Juice: And with ſome ſorts of Pears, the mixing of a few Crabs in the grinding of them, in proportion to the ſweetneſs of the Pear, is of great advantage to it, making ſome ſorts of Perry equal to that of Red-ſtreak Cyder.

Chap. VII. *Of making other ſorts of Wines or Drinks of Fruits.*

Cherry-Wine.

BEſides Cyder and Perry, there are many other Drinks prepar'd out of our *Britiſh* Fruits, as of Cherries, *&c.* which are a Fruit as eaſily propagated as any, nor is there any Fruit that commonly bears better, nor that yields more Juice; which mix'd with the richeſt *Spaniſh* Wines, makes a very fine Drink, by the addition of ſome Sugars to it.

Or the Juice it ſelf, preſs'd out and mix'd with a due quantity of Sugar and Water, makes a very rich Wine; that is very comfortable to the Stomach and Nerves.

Plumb-Wine.

The Plumb is alſo eaſily propagated; and no doubt but ſome of the more juicy ſort of them, eſpecially the Damaſcen, would yield an excellent Liquor, but ſcarcely durable unleſs boiled with Sugar, and well purified, or elſe the Sugar boil'd before-hand in Water, and then added. The Juice of the Plumb being of a thick Subſtance, will eaſily bear Dilution: This is eaſily experimented where Plumbs are in great plenty.

The Red *Dutch* Currant, or *Corinth*, yields a very rich and well-colour'd Juice, and a vinous Liquor, which is to be diluted with an equal quantity of Water boil'd with refin'd Sugar, about the proportion of one pound to a Gallon of your Wine (when mixed with the Water); and after the Water and Sugar ſo boil'd together is cold, then mix it with the Juice of the Currants, and purifie it with Iſing-glaſs diſſolved in part of the ſame Liquor, or in White-wine, as is before directed for the purifying of Cyder, after the rate of an ounce to eight or ten Gallons, but boil it not in a Braſs Veſſel for the Reaſons beforemention'd: This will raiſe a great Scum on it of a great thickneſs, and leave your Wine indifferent clear, which you may draw out either at a Tap, or by your Siphon into a Barrel, where it will finiſh its Fermentation, and in three Weeks or a Month become ſo pure and limpid, that you may bottle it with a piece of Loaf-ſugar in each Bottle in bigneſs according to your Diſcretion, which will not only abate its quick Acidity, that it may as yet retain, but make it brisk and lively.

At the time you bottle it, and for ſome time after, it will taſte a little ſweet-ſowre, from the Sugar and from the Currant; but after it hath ſtood in the Bottles ſix or eight Weeks, it will be ſo well united, that it will be a delicate, palatable, rich Wine, tranſparent as the Ruby, of a full body, and in a Refrigeratory very durable; and the longer you keep it, the more vinous will your Liquor be.

Let your Currants hang on the Trees until they are thorough ripe, which is long after they are become red, to digeſt and mature their Juice, that it need not that large addition of Sugar that otherwiſe it would do in caſe the Fruit had been gather'd when they firſt ſeem'd to be ripe, as is vulgarly us'd, and the common Receipts direct: Alſo it makes the Liquor more Spirituous and Vinous, and more capable of Duration than otherwiſe it would be if the Fruit had not receiv'd ſo great a ſhare of the Sun.

The Gooſeberry-Tree, being one of the greateſt Fruit-bearing Shrubs, yields a pleaſant Fruit; which although ſomewhat luſcious, yet by reaſon of its groſs Lee, whereof it is full, it is apt to become acid, unleſs a proportion of Water ſweetned with Sugar (but not with ſo much as the other acid Liquors) be added unto it. This Liquor, of any other, will not bear a Decoction, becauſe it will debaſe its Colour, and make it brown.

There is no Shrub yields a more pleaſant Fruit than the Rasberry-Tree, which is rather a Weed than a Tree, never living two Years together above-ground. Nor is there any Fruit yields a ſweeter and more pleaſant Juice than this, which being extracted, ſerves not only to add a Flavour to moſt other Wines or Liquors, by a ſmall addition of Water and Sugar boil'd together, and when cold added to this Juice, and purified, makes one of the moſt pleaſant Drinks in the World. The ſame way Apricock, and the Wines of other Fruits may be made.

Having given you a taſte of moſt Wines made by preſſure of the Juices out of the Fruits, you may alſo divert your ſelf with the Blood of Grapes, or any other of the beforemention'd limpid Liquors ting'd with the ſpirituous Flavour of other Fruits, that cannot ſo eaſily and liberally afford you their Juices; as, of the Apricock, which ſteep'd in Wine gives the very taſte of the Fruit; alſo Clove-gilliflowers, or ſweet-ſcented Flowers do the like. You may alſo make Experiment of ſome ſort of Peaches, Nectarines, *&c.* what Effect they will have upon thoſe ſorts of Drinks.

Chap. VIII. *Of the making of ſome other Drinks or Wines, uſually drank in this Iſland.*

THere are ſeveral other pleaſant, wholeſome and neceſſary Drinks made of Trees, Leaves, Grains, and other things, beſides ſuch Drinks or Liquors as are commonly made of the Fruits of Trees or Shrubs.

As Mead, or Hydromel, that is prepar'd out of Honey, being one of the moſt pleaſant and univerſal Drinks, the Northern part of *Europe* affords; and one of the moſt ancient Drinks of the Northern parts. Honey being to be had from the Southerly parts of *Spain* and *Italy*, *&c.* to the Arctick Circle or Frozen Zone.

Thoſe that liv'd formerly in the more Southern parts (as *Pliny* reports) made a drink compounded of Honey and tart Wine, which they term'd Melitites, by the addition of a Gallon of Honey to five Gallons of their Wine: 'Tis alſo an excellent Ingredient mix'd with Cyder.

In *Swedeland*, *Muſcovia*, and as far as the *Caſpian* Sea, they make great account of this Drink; to which Liquor they give a great advantage by the addition of the Juice of Rasberrries, Strawberries, Mulberries, and Cherries.

They alſo ſteep Rasberries in *Aqua-vitæ*, twenty four hours, and add it to their Hydromel, which is a great Amendment of it.

There are very great variety of Receipts for the making of Metheglin or Hydromel; but the beſt that I have met with, is to

Take twelve Gallons of Water, and put in the Whites of ſix Eggs, mix them well with the Water, and twenty pounds of Honey; boil it an hour, and when boil'd add Cinamon, Ginger, Mace, Cloves, and a little Roſemary, and when 'tis cold put a ſpoonful of Yeaſt to it, and tun it up, keeping of it fill'd up as it works; when it hath done working, ſtop it up cloſe, and when fine, bottle it.

But the fineſt Mead is that made of what they call Live Honey, which is what naturally runs from the Combs (but that from ſwarms of the ſame Year is the beſt) and add ſo much Honey to clear Spring-water, as that when the Honey is diſſolv'd throughly, an Egg will not ſink to the bottom, but eaſily ſwim up and down in it. Boil this Liquor in a Copper-Veſſel for about an hour or more, and by that time the Egg will ſwim above the Liquor about the breadth of a Groat, then let it cool; the next Morning you may barrel it up, adding to the proportion of fifteen Gallons an ounce of Ginger, half an ounce of Cinamon, Cloves and Mace, of each an ounce, all groſly beaten, for if you beat them fine they will always float in your Mead, and make it foul; and if you put them in whilſt it is hot, the Species will loſe their Spirits. You may alſo add a Spoonful of Yeaſt at the Bung-hole to increaſe its Fermentation; but let it not ſtand too cold at firſt, that being a principal Impediment to its Fermentation; as ſoon as it hath done working, ſtop it up cloſe, and after a Month bottle it; and the longer 'tis kept, the better it will be.

By the floating of the Egg you may judge of its Strength, and you may make it more or leſs ſtrong as you pleaſe, by adding of more Honey, or more Water; and by long boiling of it, it is made more pleaſant and durable.

The Sycamore and Wallnut-tree are ſaid to yield an excellent Juice; but that which we have the moſt Experience of, is the Birch-tree.

The Juice of which may be extracted in very great quantities; where thoſe Trees are plenty many Gallons in a Day may be gather'd from the Boughs of the Trees by cutting them off, leaving their Ends fit to go into the mouths of a Bottle, and ſo by hanging many Bottles on ſeveral Boughs, the Liquor will diſtill into them very plentifully.

The Seaſon for this Work is from the end of *February* to the end of *March*, whilſt the Sap riſes, and before the Leaves ſhoot out from the Tree; for when the Sap is forward, and the Leaves begin to appear, the Juice by a long digeſtion in the Branch grows thick and colour'd, which before was thin and limpid: The Sap alſo diſtils not in cold Weather whilſt the North and Eaſt Winds blow, nor in the Night-time, but very well and freely, when the South or Weſt Winds blow, or the Sun ſhines warm.

That Liquor is beſt that proceeds from the Branches, having had a longer time in the Tree, and thereby better digeſted, and acquiring more of its Flavour than if it had been extracted from the Trunk.

Thus many Hogſheads may ſoon be obtain'd. Poor People (where Trees are plenty) will draw it for two or three Pence the Gallon: To every Gallon whereof add a pound of refin'd Sugar, and boil it about a quarter, or half an hour, then ſet it to cool, and add a very little Yeaſt to it, and it will ferment, and thereby purge it ſelf from that little Droſs that is in the Sugar and Liquor. Put it into a Barrel, and add thereto a ſmall proportion of Cinamon and Mace bruis'd, about half an ounce of both to ten Gallons, ſtop it very cloſe, and about a Month after bottle it. Its Spirits are ſo volatile, that they are apt to break the Bottles unleſs plac'd in a cool place, without which Conveniency it will not keep long.

Inſtead of every pound of Sugar, if you add a quart of Honey, and boil it as before, and adding Spice to it, and fermenting of it as you do Mead, it makes an admirable Drink both pleaſant and medicinal.

Ale alſo brew'd of this Juice or Sap is eſteem'd very wholeſome.

Mum. Mum being become a common Drink, and being very wholeſome, and what may be made of our own Product, I ſhould hope it might be made a home Commodity inſtead of a foreign: And therefore, for the Encouragement of it, I ſhall give you the Receipt, as recorded in the Town-houſe in *Brunſwick*; which is thus:

Take 63 Gallons of Water that hath been boil'd to the Conſumption of a third part, brew it according to art, with ſeven Buſhels of Wheat Malt, one Buſhel of Oatmeal, one Buſhel of ground Beans; and when 'tis tunn'd, let not the Hogſhead be too full at firſt; and when it begins to work, put into it, of the inner Rind of Fir three pounds, tops of Fir and Birch one pound, *Carduus Benedictus* three handfuls, Flowers of Roſaſolis a handful or two, Burnet, Betony, Marjoram, Avens, Penny-royal, Wild-thyme, of each a handful and a half, of Elder-Flowers two handfuls or more, Seeds of Cardamom bruis'd three ounces, Barberries bruis'd one ounce. Put the Herbs and Seeds into the Veſſel when the Liquor hath wrought a while; and after they are added, let the Liquor work over the Veſſel as little as may be. Fill it up at laſt, and when 'tis ſtopp'd, put into the Hogſhead ten new-laid Eggs, unbroken or crack'd; ſtop it up cloſe, and drink it at two Years end.

But our *Engliſh* Brewers uſe Cardamom, Ginger and Saſſafras, which ſerves inſtead of the inner Rind of Fir, alſo Wallnut-Rinds, Madder, Red Sanders, and Enula Campana; and ſome make it of Strong-Beer, and Spruce-Beer; and where 'tis deſign'd moſtly for its Phyſical Virtues, ſome add Water-creſſes, Brook-lime, and Wild-parſley, with ſix handfuls of Horſe-radiſh raſp'd to every Hogſhead, according to what their Inclinations and Fancy moſt lead them.

57° Sun {riſes $8^h 0^m$ / ſets 4 0} ≈ January {hath days xxxi.} Long. $8^h 0^m$

Note, That the Riſing and Setting of the Sun, and Length of the Days, is computed from the firſt of every Month, *Lond. Lat.*

IF this Month prove cold, 'tis ſeaſonable to kill the Vermin and Weeds, and to mellow the Ground: and is the chief time to plow up Lays, to fallow the Ground you intend for Peas, to water Meadows and Paſtures, to drain Arable Grounds where you intend to ſow Peas, Beans, Oats, or Barley, to lay Dung on heaps to carry on the Land in froſty Weather, to make Hedges, Ditches, to cut Ant-hills, and to fill up the Holes in Meadows and Paſture-ground, to gather Stones, &c.

Rear Calves, Pigs, &c. *have eſpecial Care of Ewes and Lambs, Houſe Calves; geld young Cattle ſoon after they are fallen; feed Doves, repair Dove-coats.*

Plant Timber-Trees, Coppice-wood, or Hedge-wood, and alſo Quickſets; cut Coppices and Hedge-rows, lop and prune greater Trees.

Work to be done in the *Orchard* and *Kitchen-Garden.*

Trees.

Prune Vines and forward Fruit-Tree: if the Weather be open and mild, dig and trench Gardens or other Ground for Peas, Beans, &c. *Againſt the Spring, dig Borders; prepare your Soil or Manure; and ſuffer no Weeds to grow on them: Uncover Roots of Trees where need is, and add ſuch Manure to them as they raquire, not laying of it too near the Roots: You may alſo, if the Weather prove mild, ſet Beans and Peas: As yet Roſes may be cut and remov'd.*

Grafts.

Gather Pears, Cherries, and Plumb Cions for Grafts about the latter end of this Month, before the Bud ſprouts, which ſtick in the Ground for ſome time, becauſe they will take the better for being kept a ſmall time from the Tree; and graft them the beginning of the next Month. Cleanſe Trees of Moſs, the Weather being moiſt.

Make Hot-beds, and ſow therein your choice Sallets, as Chervil, Lettice, Radiſh, &c. *Sow early Colliflowers: Secure your choice Plants and Flowers from the*

the injuries of the Weather by Covers, Straw or Dung. Earth up the Roots of ſuch Plants as the Froſt hath uncover'd.

Set Traps to deſtroy Vermin where you ſow or have ſuch Plants or Seeds as they will injure. Take Fowls; deſtroy Sparrows in Barns, and near them kill Bullfinches, &c. *and in Wet or hard Weather clean, mend, ſharpen, and prepare your Garden-tools.*

Dig up weedy Hop-Gardens. Hops.

Turn up your Bee-hives, and ſprinkle them with warm and ſweet Wort. Alſo you may remove Bees. Apiary.

Fruits in prime, and yet laſting.

Kentiſh, Ruſſet, Golden, and French *Pippins, Kirton Pippins and* Holland *Pippins,* John *Apples, Winter Queenings, Marigold, Harvy-Apple, Pomewater, Golden Doucet, Renneting, Love's Pearmain, Winter Pearmain,* &c. Apples.

Winter Muſk (bakes well,) Winter Norwich (excellent baked,) Winter Burgamot, Winter Bon-Chreſtien, both Mural, the great Surrein, &c. Pears.

THis is a principal Seed-Month, for ſuch as they commonly call Lenten Grain, and is uſually ſubject to much Rain or Snow, which is not unſeaſonable.

Now ſow all ſorts of Grey-Peas, Fitches, Beans and Black Oats; carry out Dung, and ſpread it before the Plough, and alſo on Paſture Ground; this being the principal Month for that purpoſe.

This is the beſt time to plant Trees and Quick, as alſo to plaſh it; to ſet Willows, Plants or Pitchers, and alſo Poplars, Oſiers and other Aquaticks; and to ſhroud or lop Trees, or cut Coppices.

Sow Muſtard-ſeed, and Hemp ſeed, if the Spring prove mild: Feed your Swans, and make their Neſts where the Floods cannot reach them.

Soil Meadows that you cannot overflow or water, catch Moles, and cut Mole-hills, and take great care of Ewes and Lambs where they are forward.

Work to be done in the *Orchard* and *Kitchen Garden.*

Prune, trim and nail up Fruit-trees, and cleanſe them from Moſs and Cankers: Now is a good time to graft the more forward ſort of Fruit, if the Weather be temperate.

Do not prune your tender Wall-fruit till you think the hard Froſts over, tho' it ought to be done before the Buds and Bearers grow turgid, and mind to ſpread your Wall-trees well at the bottom.

Plant Vines, or any ſort of Fruit-trees in open Weather; trim up your Palliſado-Hedges and Eſpaliers; ſet Kernels, Nuts or Stones of Fruit, and ſow other hard Seeds.

Lay Branches to take Root, or place Baskets, &c. *of Earth for the Branches to paſs through. Graft in the Cleft, and ſo continue to the latter end of the next Month.*

Sow Anniſe, Beans, Peas, Radiſh, Parſnips, Carrots, Potatoes, Onions, Parſly, Spinage, Corn-Salletting, and other hardy Herbs or Seeds, and plant Cabbage-plants and Colliflowers in warm places; alſo Liquorice, and ſow Aſparagus if the Spring be mild. Now the Bulfinches do the moſt hurt to Fruit-trees. This is the beſt time to raiſe any thing that will grow of Slips.

Make hot Beds for Melons, Cucumbers, &c. *continue Vermin-traps, and pick up all the Snails you can find, deſtroying the Frogs and their Spawn.*

This is a good time to ſew Fiſh-ponds, and to take Fiſh, moſt Fiſh being now in Seaſon.

You may, if the Weather prove mild, plant Hops, and dreſs them that are out of heart. And alſo dig up your Hop-ground, if 'tis weedy. Hops.

Half open the paſſage for Bees, and now you may remove them, but continue to feed weak Stocks.

Fruits in prime, or yet laſting.

Kentiſh, *Kirton, Ruſſet,* Holland *Pippins, Deux-ans, Winter Queening, Harvey, ſometimes Pomewater, Pome-roy, Golden Doucet, Renneting, Love's Pearmain, Winter Pearmain,* &c. Apples.

Bon Chreſtien of Winter, Winter Poppering, Little Dagobert. Pears.

IF

Sun riſes $6^h 19^m$ ſets 5 41 ♈ March hath days xxxi. Long. $11^h 22^m$

IF this Month prove cold 'tis ſeaſonable to check the pregnant Buds till a more ſafe Seaſon; and if it prove dry, the Country-man eſteems it to preſage a happy born Year. You may yet prune or plant Trees, tho' 'tis of the lateſt of all ſorts, except Winter-Greens.

Let Cattle feed no longer on Meadows that you intend to mow; have eſpecial regard to the Fences both of Meadow, Corn and Woods, and take care of Ewes and Lambs.

About the end of this Month you may begin to ſow Barley, earlier in Clay than Sand; you may roll Wheat if the Weather prove dry; make an end of ſowing of all ſorts of Pulſe. You may now ſhroud or lop old Trees, and fell Coppice-wood before the warm part of the Month come in.

This is the only time to raiſe the beſt Poultry.

It is now a good time to ſet Oſiers, Willows and other Aquaticks; ſow the Rye, called March-*Rye and Oats, and plant Saffron, Woad, Weld, Madder and Liquorice.*

In this Month and the next ſow all ſorts of French *Graſſes, or new Hays, as Clover S. Foyn,* &c. *alſo now ſow Hemp and Flax, if the Weather be temperate.*

This is the principal Month in the Year for the deſtruction of Moles.

Work to be done in the *Orchard* and *Kitchen-Garden.*

This is the chief Month for grafting, beginning with Pears, and ending with Apples; only if the Spring proves forward, be the earlier. Prune laſt Year's Grafts, and cut off the Heads of your budded Stocks. Now cover the Roots of all ſuch Trees as you laid bare the preceding Winter, and remove ſuch young Trees as you omitted before, if the Bud is not too forward.

Plant Peaches and Nectarines, but cut not off the Tap-root as you do of other Trees, becauſe it will prejudice them.

Carry Dung into your Orchards, Gardens, &c. *turn your Fruit in the Room where it lies, but open not yet your Winds. Smoak your Orchards.*

Top your Roſe-trees near a Leaf-bud, and prune off the dead and wither'd Branches, keeping of them to a ſingle Stem. Slip and ſet Sage, Roſemary, Thyme, Lavender, &c.

You may now tranſplant moſt ſorts of Garden-herbs, Sweet-herbs, and Summer Flowers. Now is the beſt time to make Hot-beds for Cucumbers, Melons, &c.

Now ſow Aliſander, Baſil, Beets, Borrage, Bugloſs, Cabbage, Carrots, Chervil, Creſſes, Endive, Fennil, Garlick, Leeks, Lettice, Marigolds, Marjoram, Onions, Orach, Parſnips, Parſley, Peas, Purſlain, Radiſh, Sellery, Smallage, Spinage, Skirrets, Sorrel, Succory, Turneps, Tobacco, &c. *and Samphire to replant in* May, *which will grow well of* French *Seed.*

About the middle of this Month dreſs and ſtring Strawberries, uncover Aſparagus Beds, and dig about them. You may alſo now tranſplant Aſparagus Roots to make new Beds. Slip and plant Articboaks and Liquorice.

Stake and bind up weak Plants againſt the Wind: Sow Pinks, Carnations, &c. *In this Month ſow Pine-kernels, and the Seeds of all Winter-greens.*

Plant all Garden-herbs and Flowers that have fibrous Roots. Sow choice Flowers, that are not natural for our Clime in hot Beds this Month.

You may now plant Hops: This is a very ſeaſonable time to dreſs them. Now the Bees ſit, keep them cloſe Night and Morning: If the Weather prove ill, you may yet remove Bees.

Fruits in prime, or yet laſting.

Golden Ducket (Doucet), Pippins, Rennetings, Love's Pearmains, Winter Pearmains, John *Apples*, &c.

Later Bon Chreſtien, Double-bloſſom Pear, &c.

A Dry Seaſon in this Month is beſt to ſow Barley and White Oats in, to prevent Weeds, and likewiſe to fallow in.

Fell the Timber you intend to bark, if the Spring be forward: Cleanſe and rid your Coppices, and preſerve them from Cattle: Keep Geeſe and Swine out of Commons and Paſtures, and Water new-planted Trees, if the Weather prove dry.

Pick up Stones in the new-ſown Land: Sow Hemp and Flax.

Cleanſe Ditches, and get in your Manure that lies in Streets or Lanes, or lay it on heaps.

Set Oſiers, Willows, and other Aquaticks, before they are too forward.

You may throughout this Month ſow Clover-graſs, St. Foyn, and all French *and other Graſſes or Hays; and plant Madder, and be ſelling of your Winter-fed Cattle.*

Work to be done in the *Orchard* and *Kitchen-Garden*.

You may yet graft ſome ſorts of Fruit in the Stock the beginning of this Month.

Now ſow all ſorts of Garden-ſeeds in dry Weather, and plant all ſorts of Garden-herbs in wet Weather.

Plant Cucumbers, Melons, Artichoaks, and Madder; and ſow ſuch tender Seeds as could not abide the harder Froſt. Set French *Beans, gather up Worms and Snails after Evening-ſhowers, and early in the Morning.*

Sow Turneps, to have them early, and your annual Flowers that come of Seeds, that you may have Flowers all the Summer; and tranſplant ſuch Flowers with fibrous Roots as you left unremoved in March. *Sow alſo the Seeds of Winter-greens.*

Now bring forth your tender Plants you preſerved in your Conſervatory, except the Orange-tree, which may remain till May.

Smoak your Orchard with Straw towards the Evening.

Tranſplant and remove your tender Shrubs, as Jeſſamines, Myrtles, Oleanders, &c. *Towards the end of this Month, alſo in mild Weather, clip Phyllyrea and other tonſil Shrubs, and tranſplant any ſort of Winter-greens.*

Plant Hops, and Pole them the beginning of April, *and bind them to the Poles.* Hop-garden.

Open the Doors of the Bee-hives, for now they hatch, that they may reap the benefit of the flowry Spring, and be careful of them. Apiary.

Fruits in prime, or yet laſting.

Pippins, Deuxans, Weſtberry Apple, Ruſſeting, Gilliflower, Flat Rennet, &c. Apples.

Later Bon-chreſtien, Oak-Pear, Double Bloſſom, &c. Pears.

About the beginning of this Month ſow ſweet Marjoram, Hyſop, Thyme, Scurvy-graſs Baſil, *Winter Savory and tender Plants; ſow alſo Purſlain, Colliflowers, Lettuce, Radiſh, Carrots; plant Artichoak Slips; ſow Turneps; ſet* French *Beans; ſlip Lavender, Sage, Pennyroyal, Roſemary, Lavender,* &c.

Sun {riſes 4^h 25^m / ſets 7 35} ♊ May {hath days xxxi.} Long. 15^h 9^m

IF this Month prove dry, it gives great hopes of a full Barn; and if cold, 'tis an Omen of Good for Health. The pleaſure of Angling is now in its ſplendor, eſpecially for the Trout and Salmon.

Now wean thoſe Lambs you intend to have the Milk of their Ewes: Forbear cutting or cropping of Trees you intend ſhall thrive till October: *Kill Ivy.*

If your Barley be too rank, now you may mow it, or feed it with Sheep or Hogs, before it be too forward: Weed Corn. In ſome places Barly may be ſown in this Month. Begin to fold Sheep, and put your Mares to the Horſes.

Now ſow Buck-wheat or Brank: Sow Latter Peas: Alſo Hemp and Flax may yet be ſown: Put fatting Cattel and milch Cows into freſh Paſture, and let nothing be wanting in the Dairy.

Weed Quickſets, drain Fenns and wet Grounds, twifallow your Land, carry out Soil or Compoſt, gather Stones from the Fallows, turn out the Calves to graſs, over-charge not your Paſtures, leſt the Summer prove dry, get home your Fewel, begin to burn-beat your Land, and ſtub or root up Goſs, Furze, Broom, Buſhes, &c. that you intend ſhall not grow again.

Sell off your Winter-fed Cattel: About the end of this Month mow Clover-graſs, St. Foyn, and other French *Graſſes. Now leave off watering your Meadows, leſt you gravel or rot your Graſs.*

Look well after your Sheep if this Month prove rainy, leſt the Rot ſurprize them.

Work to be done in the *Orchard* and *Kitchen-Garden.*

Plant all ſorts of Winter-greens, and ſow the more tender Seeds, as, Sweet-marjoram, Baſil, *Thyme, and hot aromatick Herbs and Plants: Set Sage and Roſemary.*

Smoak your Orchard as before, thin your Salletting and other Herbs, that what you leave may thrive the better.

Cover no longer your Cucumbers, Melons, &c. *excepting with Glaſſes: Sow Purſlain, Lettuce,* &c. *and diſtil Plants for Waters, Spirits,* &c.

At the end of this Month take up ſuch Tulips as are dried in the Stalk.

Bind Hops to their Poles, and make up the Hills after Rain.

Now ſet your Bees at full liberty, and expect a Swarm.

Fruits in prime, and yet laſting.

Pippins, Deuxans, or John *Apple,* Weſtberry *Apples, Ruſſetting, Gilliflower Apples, the Maligar,* &c. *Codling.* Apples.

Great Kairville, Winter Bon-Chreſtien, Black Pear of Worceſter, *Surrein, Double-bloſſom Pear,* &c. Pears.

The May *Cherry, Strawberries,* &c. Cherries, *&c.*

A Shower at this time of the Year is welcome, and if the Weather be calm it makes the Farmer ſmile on his hopeful Crops.

This Month is the prime Seaſon for the Waſhing and Shearing of Sheep; in forward Meadows now Graſs for Hay.

Caſt Mud out of Ditches, Pools, Rivers: This is the beſt time to raiſe Swine for Breeders.

Twy-fallow your Land in hot dry Weather, it kills the Weeds, and ſweetens the Land, one plowing then being worth three or four in rainy Weather.

Carry Marl, Lime and Manure of what kind ſoever to your Land, bring home your Coals, and other neceſſary Fuel fetch'd far off, before the Teams are buſie at Harveſt.

You may continue to weed Corn, the beginning of this Month, but not longer; ſow Rape and Coal-ſeed, and alſo Turnep-ſeed. Now Mill-dews or Honey-dews begin to fall.

Mind your Sheep, as was adviſed before in May, *and make the firſt return of fat Cattle.*

Work to be done in the *Orchard* and *Kitchen-Garden.*

Now begin to inoculate, and beware of cutting of Trees other than the young Shoots of this Year, pluck off Buds where you are not willing they ſhould Branch forth.

Water your latter planted Trees, and lay moiſt Weeds, &c. *at the Roots of them, having firſt cleared them of Weeds, and a little ſtirred the Earth, and hoe up all ſuch Weeds as grow in your Nurſery.*

This is a ſeaſonable time to diſtil Aromatick and Medicinal Herbs, Flowers, &c. *and to dry them in the ſhade that you deſign to keep dry for the Winter, gathering of them in the Full of the Moon, alſo to make Syrups,* &c.

Gather Snails, Worms, &c. *and deſtroy Ants; kill Inſects and other Vermin; ſet Saffron, plant Roſemary*

mary and Gilliflowers, ſow Lettuce, Chervil, Radiſh and other Sallets for latter Salleting.

Gather Seeds that are ripe, and preſerve them cool and dry, water dry Beds, and take up the Bulbous Roots of Tulips, Anemonies, &c.

Inoculate Jeſſamines, Roſes, &c. *alſo tranſplant any ſort of bulbous Roots that keep not well out of the Ground. Now plant Slips of Myrtle, and ſow latter Peas.*

You may now alſo (or in May *before) cleanſe Vines of exuberant Branches and Tendrils, cropping (not cutting) and ſtopping the ſecond Joint immediately above the Fruit, eſpecially in young Vineyards, when they firſt begin to bear, and thence forward binding up the reſt to Props.*

Dig your Ground where you intend to Hop Garden, and bind ſuch Hops to the Poles as the Wind hath ſhaken off.

Bees now Swarm plentifully, therefore be very vigilant over them; they will requite your care.

Fruits in prime, or yet laſting.

Jennetting (firſt ripe,) Pippins, John *Apples, Robillard, Red Fennovil,* &c. Apples.

The Maudlin *(firſt ripe,)* Madera, *Green Royal, St.* Laurence *Pear,* &c. Pears.

Duke, Flanders, *Heart Black, Red, White.* Cherries.

Luke, *Ward, Early* Flanders, *the Common Cherry,* Spaniſh *Black,* Naples *Cherries,* &c.

Rasberries, Corinths, *Strawberries, Melons,* &c.

THE Earth now would be glad of refreſhing ſhowers to moiſten the ſcorched Vegetables. Tempeſts now much injure the laden Fruit-trees and ſtanding Corn, to the great detriment of the Husbandman.

Now is the univerſal time for Hay-making: Loſe not a good opportunity, eſpecially if Fair-weather be ſcarce.

Mow your Head-lands and try-Fallow where the Land requires it. Gather the Fimble or earlieſt Hemp and Flax.

At the latter end of this Month Corn-Harveſt begins in moſt places in a forward Year. Still carry forth Marl, Lime, and other Manure: Bring home Timber, Fewel, and other heavy Materials.

Wheat and Hops are now ſubject to much damage by Mildews.

Sow Turnep-ſeed in this Month, and ſell ſuch Lambs as you have fed for the Butcher.

Work to be done in the *Orchard* and *Kitchen-Garden.*

This is the chief time to inoculate choice Fruit, Roſes, &c. *and for the Summer pruning of Wall-trees for the making of Cherry-wine, Rasberry-wine,* &c.

Re-prune Apricocks and Peaches, ſaving as many of the young likelieſt Shoots as are well plac'd, for the new Bearers commonly periſh; the new ones ſucceeding cut cloſe, and even purging your Wall-fruit of ſuperfluous Leaves, which keep the Fruit from the Sun; but do it diſcreetly.

Graft by Approach, and inoculate Jeſſamines, Oranges, &c.

Cut off the Stocks of ſuch Flowers as have done bloſſoming, and cover their Roots with new fat Earth.

Sow Sallet Herbs for latter Salleting, and alſo Peas.

Take away Snails from Mural-trees, Slip ſtocks, and other lignous Plants and Flowers. Lay Gilliflowers and Carnations for increaſe, watering of them, and ſhadowing of them from the fervent heat of the Sun-beams. Lay alſo Myrtles and other curious Greens. Clip Box and other tonſil Plants.

Let your Olitory Herbs run to Seeds that you deſign to ſave. Tranſplant or remove Tulips or other bulbous Roots : ſome may be kept out of the Ground, and others immediately planted.

Towards the latter end of this Months viſit your Vines again, &c. *and ſtop the exuberant Shoots at the ſecond Joint above the Fruit (if not done before) but not ſo as to expoſe it too much to the Sun without ſome Umbrage.*

Keep down Weeds that they grow not to Seed, and begin your Work of Hoeing ſo ſoon as they begin to peep; by this means you will diſpatch more in a few hours than afterwards in a whole day, in that the ſtirring of the Earth will but help the increaſe of the Seed.

If the Seaſon be dry, the watering of Hops will very much advantage them, and make them the more fruitful; if it prove moiſt, renew and cover the Hills ſtill with freſh Mold.

Now Bees caſt their latter Swarms, which are of little advantage ; therefore 'tis beſt to prevent them : Streighten the Entrance of the Hives, kill the Drones, Waſps, Flies, &c.

Fruits in prime, or yet laſting.

Deaux-ans, Pippins, Winter Ruſſetting, Andrew *Apples, Cinamon Apples, red and white Jenneting, the* Margaret Apples, &c. Apples.

The primate Ruſſet Pear, Summer Pears, Green Chiſſel Pear, Pearl Pear, &c. Pears.

Carnation, Morella, Great Bearer, Morocco *Cherry, the Egriot, Bigarreaux,* &c. Cherries.

Nutmeg, Iſabella, Perſian, Newington, *Violet, Muſcat, Rambouillet.* Peaches.

Primordial, Myrobalan, the red, blue, and amber Violet, Damask, Denny Damask, Pear-plumb, Violet or Cheſon-plumb, Apricock-plumb, Cinamon-plumb, the King's-plumb, Spaniſh Morocco *plumb, Lady* Elizabeth's *plumb, Tawny, Damaſcen,* &c. Plumbs, *&c.*

Rasberries, Goosberries, Corinths, *Strawberries, Melons,* &c.

THis Month returns the Country-man's Expences into his Pocket, and encourages him to another Year's Adventure. If it proves dry, warm, and free from high Winds, it ſaves a great deal of the Husbandman's Expence.

You may yet trifallow, alſo lay on your Compoſt or Soil, as well on your Barley Land as Wheat Land.

Carry Wood, or other Fuel home, before Winter.

Provide good Seed, and picked well, againſt Seed time.

Put your Ewes and Cows you like not to fatting.

This is the principal Month for Harveſt for moſt ſorts of Grain, therefore make uſe of good Weather whilſt you have it.

About the end of this Month you may mow your After-graſs, and alſo Clover, St. Foyn, and other French *Graſs. Geld Lambs, and make the ſecond return of your fat Sheep and Cattel.*

Work to be done in the *Orchard* and *Kitchen-Garden*.

The former part of this Month is the beſt time to inoculate. You may now make Cyder of Summer fruits. Prune away ſuperfluous Branches from your Wall-fruit-Trees; but leave not your Fruit bare, except the Red Nectarine, which is much meliorated by lying open to the Sun, nailing up what you deſign to ſpare to cover the Defects of your Walls.

Pull up Suckers from Roots of Trees, unbind the Buds you inoculated a Month before, if taken.

Plant Saffron; ſet Slips of Gilliflowers; ſow Anniſe. Now is beginning a ſecond Seaſon for the increaſing and tranſplanting of moſt Flowers, and Garden-Plants and Herbs, Strawberries, &c.

The Seeds of Flowers and Herbs are now to be gathered: Alſo gather Onions, Garlick, &c.

Sow Cabbage, Colliflowers, Turneps, and other Plants, Roots and Herbs, for the Winter, and againſt Spring; and alſo Endive, Angelica, Scurvy-graſs, &c.

Now ſow Larks-heels, Candy-tufts, Columbines, &c. *and ſuch Plants as will endure the Winter.*

You may yet ſlip Gilliflowers, and tranſplant bulbous Roots. About Bartholomew-tide, *ſome eſteem the only ſecure ſeaſon for removing of Perennial, or Winter-green, as Phyllyreas, Myrtles,* &c. *It is alſo the beſt time to plant Strawberries; and 'tis not amiſs to dreſs Roſes that have done bearing, and plant them about this time.*

Prop up thoſe Poles the Wind blows down: Alſo near the end of the Month gather Hops.

Towards the end of the Month take Bees, unleſs the goodneſs of the Weather provoke you to ſtay till the middle of the next Month. Deſtroy Waſps and other Inſects; and ſtraiten the Paſſages to ſecure them from Robbers.

Fruits in prime, and yet laſting.

The Ladies-longing, Kirkham *Apple,* John *Apple,* Apples. *Seaming Apple, Cuſhion Apple, Spicing* May-*flower, Sheeps-ſnout.*

Windſor, *Sovereign, Orange, Bergamot, Slipper Pear,* Pears. *Red* Catharine, *Ring* Catharine, *Penny Pear,* Pruſſia *Pear, Summer Poppering, Sugar Pear, Lording Pear,* &c.

Roman *Peach, Man Peach, Quince Peach, Rambouillet,* Peaches. *Musk Peach, Grand Carnation,* Portugal *Peach, Crown Peach,* Bourdeaux *Peach, Lavar Peach, Peach Deſpot* Savoy, *Malacota.*

The Muroy Nectarine, Tawny, Red Roman, Nectarines &c. *Little green Nectarine, Cluſter Nectarine, Yellow Nectarine.*

Imperial Blue, White Dates, Yellow Pear-plumb, Plumbs. *Black Pear-plumb, White Nutmeg, Late Pear-plumb, Great* Anthony, Turkey-*plumb, the* Jane-*plumb.*

Cluſter Grape, Muſcadine, Corinths, *Cornelians,* Other Fruits. *Mulberries, Figs, Filberts, Melons,* &c.

Gentle Showers now do well, and make the Earth mellow, preparing of it for Wheat, which delights in a moiſt Receptacle; but ſtill Weather and dry is moſt ſeaſonable for the Fruits yet on the Trees. The Salmon and Trout in moſt Rivers go now out of ſeaſon till Chriſtmas.

This Month is the moſt univerſal time for the Farmer to take Poſſeſſion of his new Farm. Get good Seed, and ſow Wheat in the Dirt, and Rye in the Duſt.

Mend the Fences about the new-ſown Corn; ſcare away Crows, Pigeons, &c.

Geld Rams, Bulls, &c. *Sew Ponds: Put Boars up in the Sty.*

Beat out Hemp-ſeed, and water Hemp; gather Maſt, and put Swine into the Woods.

Carry home Brakes, ſaw Timber and Boards, and manure your Wheat Lands before the Plough. Thatch your Stacks and Ricks, and make an end of Carting.

Work to be done in the *Orchard* and *Kitchen-Garden.*

You may now make Cyder and Perry of ſuch Fruits as are not laſting, and gather your forwardeſt Fruit, but not your laſting Winter-fruit till after Michaelmas. *Alſo gather your Windfalls every day that is dry.*

Releaſe inoculated Buds, if not done before, eſpecially if they pinch.

Sow Cabbages, Colliflowers, Turneps, Onions, &c. *Tranſplant Artichoaks and Aſparagus Roots, and Strawberries out of the Woods. Plant forth your Cabbages and Colliflowers that were ſown in* Auguſt, *and make thin the Turneps where they grow too thick.*

Now plant your Tulips, and other bulbous Roots you formerly took up; or you may now remove them: You may alſo tranſplant all fibrous Roots.

Now withdraw your choice Plants into the Conſervatory, and ſhelter ſuch Plants as are tender, and ſtand abroad.

Towards the end of this Month you may gather Saffron, and earth up your Winter Plants and Sallet Herbs; and prepare Compoſt to trench your Earth and Borders with.

Now finiſh the gathering and drying of your Hops, cleanſe the Poles of the Hawm, and lay up the Poles for next Spring.

Take your Bees, in time; ſtraiten the Entrance into the Hives, and deſtroy Waſps, &c. *Alſo you may now remove Bees.*

Fruits in prime, and yet laſting.

Apples. *The Belle-boone, the* William *Pearmain, Lording-Apple, Pear-Apple, Quince-Apple, Red-greening, Ribbed bloody Pippin, Harvy Violet Apple,* &c.

Pears. Hampden's *Burgamot (firſt ripe,) Summer Bon Chreſtien,* Norwich, *Black* Worceſter *(baking,) Green-field, Orange Burgamot, the Queen-hedge Pear,* Lewis *Pear (excellent to dry,)* Frith *Pear,* Arundel *Pear (alſo to bake,)* Brunſwick *Pear, Winter Poppering,* Bing's *Pear (baking,)* Diego, *Emperor's Pear, Bluſter Pear, Meſſire* Jean, *Rowling Pear, Balſam Pear, Bezy D' Hery,* &c.

Peaches. *Malacoton, and ſome others, if the Year prove backward, Almonds, Quinces,* &c.

Little blue Grape, Muſcadine Grape, Frontiniac, Parſly, great blue Grape, the Verjuice Grape (excellent for Sauce, &c.*) Barberries,* &c.

OCTOBER *often gives an earneſt of what we are to expect from the ſucceeding Winter.*

If it prove Windy, as it uſually doth, it finiſhes the fall of the Leaf, and alſo ſhakes down the Maſt and other Fruits, leaving neither Leaf nor Fruit.

Lay or Plow up your Barley Land as dry as you can. Seed time yet continues, eſpecially for Wheat.

Well Water-furrow, and Drain new ſown Corn Land. Now it is a good time to ſow Acorns, Nuts, or other ſorts of Maſt or Berries for Timber, Coppice-wood or Hedges. You may ſtill gather Saffron.

Sow Peas in a warm fat Land, you may plant Quick-ſets, and all ſorts of Trees for Ornament or for Vſe, and alſo plaſh quick Hedges.

Wean the Foals that were foaled of your Draught Mares; at Spring put off ſuch Sheep as you have not Wintering for.

Follow Malting, this being a good time for that Work.

Spare your private Paſtures, and eat up your Corn Fields and Commons, give over folding of Sheep, and ſeparate the Lambs from the Ewes that you deſign to keep for your own uſe.

Work to be done in the *Orchard* and *Kitchen-Garden.*

Make Cyder and Perry of Winter Fruit throughout this Month; now is a very good time to plant all ſorts of Fruit-trees, or any other Trees that ſhed their Leaf.

Trench ſtiff Grounds for Orcharding and Gardening to lie for a Winter fallowing. Now is the time for Ablaqueation, or laying open of the Roots of old or unthriving Trees, or ſuch as ſpend themſelves too much or too ſoon in Bloſſom.

Gather the reſidue of your Winter-Fruit, alſo gather Saffron.

Sow all ſorts of Fruit-Stones, Nuts, Kernels and Seeds, either for Trees or Stocks; ſome alſo ſow Peas *in a rich warm Soil to be early in the Spring ; and you may yet ſow* Genoa *Lettuce, which will laſt all the Winter, and Parſnips. Chooſe no Trees for a Wall that are not above two Years grafting.*

Many of the September *Works may be yet done, if the Winter be not too forward.*

Now plant your bulbous Roots of all ſorts, and continue planting and removing ſeveral Herbs and Flowers, with fibrous Roots, if a former and better ſeaſon be omitted.

This Month is the beſt time to plant Hops, and you may bag or pack thoſe you dried the laſt Month. Hops.

Now you may ſafely remove Bees. Bees.

Fruits in prime, or yet laſting.

Belle and Bonne William, *Coſtard, Lording, Parſley Apples, Pearmain, Pear-apple, Honey-meal,* &c. Apples.

The Law-pear (baking,) Green Butter-pear, Thorn-pear, Clove-pear, Rouſet-pear, Lombert-pear, Ruſſet-pear, Saffron-pear, Violet-pear, Petworth-*pear, or Winter-*Windſor. Pears.

Bullace, and divers of the September *Plumbs and Grapes, Pines, Arbutus,* &c.

This

Sun { riſes 7^{h} 34^{m} / ſets 4 26 } ♐ Nov. { hath days xxx. } Long. 8^{h} 52^{m}

THIS Month generally proves dry, and the Earth and Trees are wholly uncloathed. Sowing of Wheat on a concluſion is yet allowable on very warm rich Land, eſpecially ſuch as are Burn-baited.

The Countryman now generally forſakes the Fields, and ſpends his time in the Barn and Market.

Fat Swine are now fit for ſlaughter, leſſen your ſtocks of Swine and Poultry.

Thraſh not Wheat to keep till March, *leſt it prove foiſty.*

Lay Straw or other waſt ſtuff in moiſt places to rot for Dung; alſo lay Dung on heaps.

Fell Coppices, Wood and Trees for Mechanick Uſes, as Plough-boot, Cart-boot, &c. *and plant all ſorts of Timber or other Trees; break Hemp and Flax.*

Now you may begin to overflow your Meadows that are fed low, and to deſtroy Ant-Hills.

Work to be done in the *Orchard* and *Kitchen-Garden.*

Peas and Beans may now be ſet to be early in the Spring, Trench or Dig Garden Ground.

Remove and plant Fruit-trees, and furniſh your Nurſeries againſt Spring.

Lay up Carrots, Parſnips, Cabbages, Colliflowers, &c. *either for your Uſe, or to tranſplant for Seed at Spring; cover Aſparagus Beds, Artichoaks, Strawberries, and other tender Plants with long Dung, Horſe-litter, Straw or ſuch like, to preſerve them from Froſt. Dig up Liquoriſh.*

Now is the beſt Seaſon to plant the faireſt Tulips, if the Weather prove not very bad.

Cover with Mattreſſes, Boxes, Straw, &c. *your tender Seedlings. Plant Roſes, Lilac, and ſeveral other Plants and Flowers, the Weather being open.*

Take up your Potatoes for Winter ſpending, trench and fit your Ground for Artichoaks, &c. *as yet you may ſow Nuts, Stones,* &c.

Hops. *Now carry Dung into the Hop Garden, and mix it with Earth that it may rot againſt Spring.*

Apiary. *You may this Month cloſe ſtop up your Bees, ſo that you leave breathing Vents, or you may Houſe them till warm Weather.*

Fruits in prime, or yet laſting.

Apples. *The Belle Bonne, the* William, *Summer Pear-main, Lording Apple, Pear Apple, Cardinal, Winter Cheſnut; Short Start,* &c. *and ſome of the former Months.*

Pears. *Meſſire* Jean, *Lord Pear, Long Burgamot, Warden (to Bake,) Burnt Cat, Sugar Pear, Lady Pear, Ice Pear, Done Pear, Deadman's Pear, Winter Burgamot, Belle Pear,* &c.

Arbutus, Bullaces, Medlars, Serviſes.

THE Earth is now commonly lock'd up under its frozen Coat, that the Husbandman hath leiſure to ſit and ſpend what Store he hath before-hand provided.

Now is the time to houſe old Cattle, and to cut all ſorts of Timber, and other Trees for Building, or other Utenſils; to fell Coppices, &c.

Let Horſes blood, fatten Swine and kill them. Deſtroy Ant-hills.

Plow up your Land that you deſign for Beans; drain Corn-fields where Water offends, and water or overflow Meadows.

Put your Sheep and Swine to the Peas-rick, and fat them for a Market. Cut Hedges and Trees.

Work to be done in the *Orchard* and *Kitchen-Garden.*

You may now ſet or tranſplant ſuch Fruit or other Trees as are not very tender, not ſubject to the Injuries of Froſt in open Weather.

Alſo you may plant Vines, or other Ships or Cions, and Stocks for Grafting; and alſo prune Vines, if the Weather be open.

Cover the Beds of Aſparagus, Artichoaks, and Strawberries with Horſe-litter, &c. *if not covered before.*

Sow Beans and Peas, if the Weather be moderate. Trench your Ground, and dreſs it againſt Spring.

Set Traps for Vermin, and pick up Snails out of the holes of Walls, &c.

Sow or ſet Bay-berries, Laurel-berries, &c. *dropping ripe. This Month you may dig up Liquorice.*

Hop garden. *Dig a weedy Hop-garden, and carry Dung into it, which mix with Earth.*

Apiary. *Feed weak Stocks.*

Fruits in prime, or yet laſting.

Apples. *Ruſſeting Pippin, Leather-coat, Winter-red Cheſsnut Apple, Great-belly, the Go-no farther, or Cats-head, with ſome of the precedent Month.*

Pears. *The Squib-pear, Spindle-pear, Doyoniere, Virgin, Gaſcoigne bergamot, Scarlet-pear, Stopple-pear, White, Red, and* French *Wardens (to bake or roaſt),* &c. *Dead-man Pear, excellent,* &c.

FINIS.

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FINIS.

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